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THE CHILD'S SPEECH.

I. THE IMPULSE TO SPEECH.

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1. The incentives which lead to the rise of speech are many and complex. Some have their origin in the world about the child; some spring from the new forces which are growing up within his own nature. He meets the demands which the world makes more than half-way. Without urging, the function would still manifest itself as a spontaneous activity reflecting the result of changes taking place in his internal constitution. Articulate expression becomes an insistent need at a certain stage of his development; he craves it as a relief, for he is burdened with thought. It was the pressure of this need which led to the original invention of speech by man, and every child experiences the craving for expression anew in his own life.

The rise of this need is a correlative of the child's growing power and the new situations in which he finds himself as a result of the extension and complication of his activities. Sense organs and muscular system have begun to serve him by controlled and co-ordinated processes. He can look and listen, reach and handle. His alert senses are turned, with ever-increasing interest, upon the variegated world about him, and his busy hands are engaged in an incessant investigation of its objects. He moves with more and more freedom, while every increase in the range of his excursions brings him into contact with things hitherto unknown, and plunges him into fresh perplexities and new dangers.

This widening horizon stimulates the child keenly. He feels new tendencies to action, and strange emotions move him. Timidity and daring clash within his nature; curiosity draws him on and fear withholds him. He is growing rapidly, and great modifications in his own organization are taking place. Inherited impulses awake as maturation proceeds in nervous and other mechanisms. Among this system of developmental changes appear the complex modifications upon which the rise of speech depends. These affect the child's own nature, as well as the world in which he finds himself, and this division affords the most convenient grouping under which they may be considered.

2. The first is the inherited system of factors. It has a double aspect, involving both structural and functional development. Organic growth affords the necessary basis for articulation and understanding alike. The nervous organization must have advanced to such a degree as to make correlation possible among the materials of sense perception, for to use speech means to connect impressions of eye and ear with the remembrance of their characteristic associates and so to understand the significant relations which make experience intelligible. It requires also that each impression, or the representation of it, shall suffice to arouse the thought of the particular verbal symbol by which in human speech it is indicated. A process of functional correlation within the nervous system, an advance—even in organization—inconceivable in its complexity, must have taken place in the brain of the newborn child before such an activity as speech can become possible. The product of the whole inherited momentum of growth which marks the first months of infancy goes to the preparation of the child for this new function of expression.

Organic development marks peripheral as well as central mechanisms. The child is born with defective organs of speech as well as an unco-ordinated brain, and the first year of life sees the mouth as well as the central nervous system taking shape. Maturation in general is accompanied by a craving for functional activity. In this special case it issues not only in the characteristic biting and chewing of the young child, but also in the use of the new powers of muscular co-ordination in

speech. In the sense, therefore, that it is correlated with a particular phase of organic development which not only makes its appearance possible, but of which it is a spontaneous product, the articulate utterance of the child may be said to be due to an inherited impulse.

3. In certain other ways also the student of speech development must have regard to the factor of heredity, for in every individual a system of congenital mental predispositions exists which plays an important part in calling it forth. These specific tendencies to reaction are commonly called the expressive and social instincts. They represent the functional aspect of development in its ecological relations.

Among these factors the most generalized type is that tendency toward the objectification of mental states through forms of muscular activity which has been called the expressive instinct. The inquiring and creative spirit of the child, thrilled by its new experiences, treats the world from the outset both as an object for speculative and practical research and as plastic material for the realization of its own ideal aims. The latter is embodied in the modification of objects and their relations—in creative construction through all its types; the former, while manifested through muscular excitement at large, depends increasingly upon the musculature of speech in the case of the human child, and out of this habit arises, by a continuous process of substitution, the expression of mental states through the use of a system of verbal concepts.

Some ideal conceptions can best—or only—be expressed through manual constructive activities, but others, which are expressive as opposed to creative in the narrower sense of the term, need a more refined and analytic medium than these gross materials afford. Plastic expression approaches nearest to this desideratum in music, the most expressive of the arts, whose technical medium is the vehicle of speech itself. Thus, considered even in its most general sense, the instinct for self-expression has issued in a system of sounds depending upon the vocal organs for their production. In speech this craving has taken its last step toward ideal development and created a system of materials by which the most subtle differences of attitude and meaning may be indicated.

4. In the development of this medium for his own individual expression the child is furthered by a second and more specific form of mental predisposition—that, namely, to imitate the sounds he hears, and especially the sounds of the human voice. For the production of these sounds a structural basis is afforded by the organic development already described. The general imitative capacity, however, receives more specific direction through the peculiar association of the human voice with the whole course of the child's experience. The later imitation of the sounds of speech is deliberate and ideal, but its earliest manifestations are the product of an inherited tendency to respond reflexly to this particular stimulus. Though this imitative activity cannot be called a phase of speech proper, it plays an important part in the development of articulation, as will be pointed out later in this series of papers.

5. With these first and most general predispositions must be mentioned another which connects the child in a more special way with his fellows and their reactions. To this the name social instinct has been given; it is the craving for sympathy and appreciation universally manifested by children, the full development of which is made possible only through the possession of speech. The child not only rearranges things in ways determined by his own preferences and expresses his momentary attitudes and feelings by voice and gesture; he also directs this expression more and more toward a receptive and reciprocating audience. This enduring tendency appeals, of course, to beings of one's own kind, to creatures who can understand and appreciate one's experience. The individual turns first, then, to his immediate fellows for sympathy and support, but if he lack such an audience he has recourse, if he be a child, to his toys and the family pets, or, if he be an adult, to posterity, to all nature (which he conceives as animate and intelligent), or to eternal justice and a divine pity as embodied in an infinite mind.

This need of social support develops with great rapidity in the child, and he soon becomes imperious in his demands. Every activity must be shared, every achievement exhibited and approved, every suffering consoled. It might even be said

that every judgment must be socially ratified before the child attains full confidence in it. The general means by which such intimate social community is made possible is found in the voice, and its special instrument consists in the system of verbal concepts which constitutes a language. Back of the development of speech in every child lies the urging of this great instinct to seek and to offer fellowship.

6. The service of reflex imitation in the development of articulate utterance is supplemented by another type of spontaneous activity possessing a hereditary basis. This is the child's tendency to repeat and vary the sounds he hears in an experimental way and for his own entertainment. To this way of treating the materials of experience at large the name of play has been given. Among the varieties of this material none is more plastic than the tones of the human voice, and the child begins his use of them in this manner long before he has acquired a proper speech—indeed, before he is able to deal successfully with any other such general medium for his own amusement. The practice which the voice receives in this way is incessant, and it serves largely in developing the full range of articulate sounds and facilitates their production. The child's earliest processes of learning arise through unstimulated play, and in the mastery of the forms of speech none can realize how large a part it plays who has not closely studied the young child's use of the voice when he is thrown upon his own resources for entertainment.

7. Such factors as these, reflecting the process of inner development in the child's own nature, co-operate in arousing and sustaining the activity of speech. But he is not simply drawn forward in the process by the current of his own mental growth; he receives positive impulses in the same direction from the external world and the demands made upon him by the many practical problems which confront him. The mastery of speech is made necessary as a condition of successful adaptation to his social environment, and thus indirectly to the surrounding world as a whole.

To be able to speak brings enormous practical advantages in addition to those esthetic satisfactions already mentioned. For the clarification of his own meaning and its permanent

record the child is later to find language indispensable, but its incidence first falls upon the function of making his wants known to others and in securing their mediation in the attainment of his various practical ends. The lack or deprivation of this power is a specific disability which entails the gravest consequences, and whatever difficulties a defective introspection may interpose, there is no mother who has not felt the inexpressible relief which comes when the child is able to understand and to answer her questions.

8. In the way of general supplementation and control of the conditions underlying the child's speech development, and for the purpose of hastening his acquisition of the faculty, it follows that he should be made to feel as fully as possible the rewards of success in speaking (or reading, or writing, as the case may be). This is accomplished in two general ways—first, by profit; for example, in getting the thing he asks for; and, secondly, by praise of his effort, which makes the experience of mastery desirable for the immediate satisfaction it affords. It follows also that the child should be brought to feel the consequences of disability in the same direct and incisive way—for example, by refusing to attend or gratify his desire if it be indicated by a gesture or an inarticulate cry when he is of an age to acquire the verbal symbol or has already made attempts to use it.

A premium is thus put upon the child's capacity at each stage of its progress. From the point of view of method it is unwise to anticipate the child's wants and interpret his most rudimentary expressions. The motive for acquiring the new function is taken away if he do not feel the need of it as a means to his own satisfaction. When the child sees that his happiness is dependent upon the possession of speech, he will quickly set himself to acquire it.

9. On the other hand, the teacher should be no less careful to let the child see that he is understood and appreciated when he speaks. He seeks recognition in word and look when he thus utters his mind, and may be seriously discouraged if it be found lacking. The adult knows how readily his own speech and thought are disturbed by an inattentive or unresponsive hearer, and can appreciate how important an element sympa-

thetic response must be in the process of acquiring speech. It is the sweetest part of the child's experience to feel that he has been understood and appreciated. His world grows at once larger and brighter. He has uttered his thought, which is itself a clarifying and educative process; he has had the immediate and inexplicable delight of sharing his experience; and he has had the sympathetic approval of a larger self, which his still insecure footing in the new world he is to master often requires as a ratification of his own thought's worth. For the child learns early that there is a struggle for survival among the many aspects under which experience may be viewed and the many thoughts about the world which arise in his mind. He is largely guided in his selection and appropriation of these—in his distinguishing of truth and error, right and wrong, etc.—by the approval or disapproval of his elders. To have used words successfully, to have expressed himself by means of an accepted social medium, is itself to have made an advance in this process of sifting, arranging and describing his world, which as much deserves recognition and praise as do his later truth-telling and unselfishness themselves. Unhappily, we are most familiar with the child's response to praise in those cases where a trivial quaintness or even a picturesque vulgarity in speech has occasioned remark or provoked an amused smile. We then find that he meets our interest by an instant repetition of the word or phrase accompanied by the most evident expressions of pride and delight. To the initial vivacity of impression in such an experience persistent idiosyncracies of child speech may in all probability owe their origin. His elders, however, often fail to recognize how generally important such attention and appreciation are to the child's progress in the use of language.

(*To be continued.*)

GRADED MENTAL TESTS.

PART II. ASSOCIATION, CONSTRUCTION AND INVENTION.

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5. Association:

A. Efficiency of old associations. It seemed desirable to find a test that would measure in terms of age the efficiency of associative connections already established. After canvassing the available tests of controlled association, the lists of opposites used by Bonser[1] seemed most suitable. This includes Series I of Norsworthy's test.[2] The advantage of these three series is that they, as well as their opposites, are all well within the youngest child's vocabulary. The list is as follows: Series I—day, asleep, absent, brother, best, above, big, backwards, buy, come, cheap, broad, dead, land, country, tall, son, here, less, mine. Series II—great, hot, dirty, heavy, late, first, left, morning, much, near, north, open, round, sharp, east, known, something, stay, nowhere, past. Series III—bad, inside, slow, short, little, soft, black, dark, sad, true, dislike, poor, well, sorry, thick, full, peace, few, below, enemy. My method was determined by the abilities of the youngest group. The experimenter gave the stimulus word and recorded the association and the reaction time. The results for different grades are more comparable than they would have been had the stimulus

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[1] F. G. BONSER. *The Reasoning Ability of Children of the Fourth, Fifth and Sixth School Grades.* Contributions to Education, Columbia University, No. 37, 1910, p. 5.

[2] NAOMI NORSWORTHY. *The Psychology of Mentally Deficient Children.* Archives of Psychology, No. 1, 1906, p. 24.

been presented visually and the pupils recorded their own association. In that case the time for making a record would vary greatly from group to group, but by this method the time taken for recording is a constant factor, and may be disregarded.

With each pupil we made sure before proceeding with the test that the meaning of "opposite" was clearly understood. The younger pupils were given some practice in naming opposites before they began Series I. In the tabulation of results we have counted as errors all responses that were not accurate. If the stimulus word was an adjective, we did not give credit for the adverbial form of the opposite or for a word approximating the opposite. There is no mental test in which an approximation is less permissible. One of the tests of efficiency in life is ability to make exactly the correct association; in other words, to react to each situation in a strictly appropriate manner.

TABLE VIII.
Association of Opposites.
Unretarded.

Group Age.	Series I (20 words). Av. No. Words.	M. V.	Time. (Sec.)	Series II (20 words). Av. No. Words.	M. V.	Time. (Sec.)	Series III (20 words). Av. No. Words.	M. V.	Time. (Sec.)	Average for All Series. Correct.	Time. (Sec.)
6	8.5	2.4	192.3	11.3	2.1	143.3	11.6	2.5	120.0	10.5	151.8
7	13.1	2.7	155.6	15.0	2.2	137.7	14.5	1.2	117.6	14.2	136.9
8	16.1	1.3	110.3	17.1	1.4	98.2	16.7	1.7	104.9	16.6	104.8
9	17.6	1.2	103.7	16.5	0.87	101.1	17.7	0.82	98.4	17.2	101.7
10	17.1	0.3	87.1	17.7	1.0	87.0	18.2	1.1	76.2	17.6	83.4
11	19.3	0.4	79.3	19.0	0.6	102.0	19.6	0.4	68.3	19.3	83.2
12	19.5	0.5	81.2	19.2	0.3	85.5	19.2	0.3	63.2	19.3	63.2
13	19.4	0.4	72.5	19.2	0.6	61.5	19.2	0.9	65.0	19.3	66.3

The correlation between this test and age is clear, but not marked by large differences. Maximal efficiency seems attainable at the eleventh year.

TABLE IX.
Association of Opposites.
Retarded.

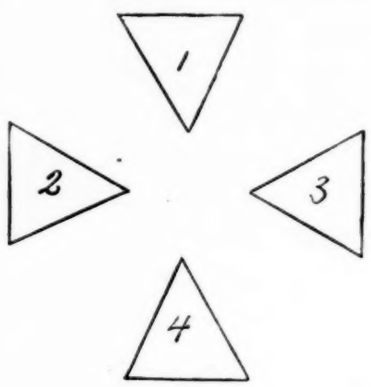
Group Age.	Series I (20 words). Av. No. Words.	M. V.	Time. (Sec.)	Series II (20 words). Av. No. Words.	M. V.	Time. (Sec.)	Series III (20 words). Av. No. Words.	M. V.	Time. (Sec.)
8	12.0	1.0	174.5	10.5	2.0	177.5	11.6	0.5	127.5
9	16.6	1.2	192.3	17.3	0.4	104.3	18.6	1.2	76.3
10	3.0	...	277.	7.	...	156.0	....	..	.....
11	17.6	0.7	101.	17.	0.8	107.2	17.4	.7	102.6
12	18.5	1.2	104.5	17.5	1.5	103.5	18.2	1.5	84.5
13	19.0	0.6	77.3	19.5	0.8	76.0	20.0	0.0	57.6

The record of the retarded group has been given in detail (Table IX) for the sake of comparison. Here, as in other tests, the results for the retarded are more irregular, and exhibit a distinctly lower general average of achievement than those for the unretarded. This test brings out the clearly subnormal condition of the one retarded child in Group 10. It was impossible to give her Series III during the time we had for the test. This child needs, and is receiving, special study.

B. Learning (formation of new associations). In these tests we have limited the term learning to the establishment of associations definitely set forth, and have neglected the higher type shown in ability to form new combinations of one's own initiative. The emphasis of the school is upon the set task.

The typical learning test, as Dr. Dearborn has pointed out,[1] is out of the question where tests must be confined to a limited time. The 'substitution test' which he has used, and the simpler ones devised by the Chicago Department of Child-Study are far more practical for clinical purposes. I found that the substitution test used by Dearborn was too difficult for the grades, though it might perhaps be used with the older groups. Instead, I used two simpler forms.

(*a*) *Maltese cross test:* The dissected Maltese cross was shown with the numerals 1, 2, 3 and 4 placed as indicated in

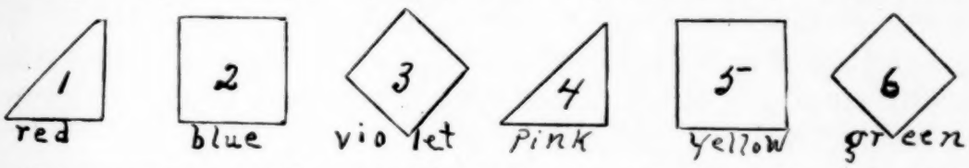


the figure. Below this figure the four parts were arranged in rows of four, distributed in varying orders. The whole figure was exposed for a brief period and attention directed to the numerals in the four parts of the cross. The figure was then

[1] W. F. DEARBORN. *Experiments in Learning.* This JOURNAL, 1: 1910, 374.

covered and the child asked to place the appropriate numerals in the dissected parts below. In case of failure to make the correct associations, his attention was again directed to the figure at the top of the page, which was again covered while an attempt was made to place the correct numerals in the distributed parts on the second row. This procedure was repeated until the correct associations had been established. The number of repetitions necessary to establish the correct associations was taken as a measure of ability to learn.

(*b*) *Colored forms test:* The second test was of similar nature, but complicated by the color factor. Six forms, two right triangles of different color, two squares of different color and two diamonds of different color were associated with the numerals 1, 2, 3, 4, 5 and 6. It was thought that by the use of two triangles, two squares and two diamonds in six different colors confusion might easily arise and the difficulty of establishing a correct association be thereby increased. The forms



in the arrangement here indicated were placed at the top of the paper. Below were placed rows of the six-colored forms, but without the numerals. The order of the forms was different in each row. The method of procedure was that described for the first learning test, and the number of repetitions required to establish the given association was again taken as the measure of facility in learning. These should have been supple-

TABLE X.

Group Age.	*Learning: Maltese Cross Test* Unretarded. Av. No. Repetitions.	M. V.	Cases Complete Failure.	Retarded. Av. No. Repetitions.	M. V.	Cases Complete Failure.	*Learning: Colored Forms Test.* Unretarded. Av. No. Repetitions.	M. V.	Cases Complete Failure.	Retarded. Av. No. Repetitions.	M. V.	Cases Complete Failure.
6	2.9	.9	2	...	...	...	3.9	1.3	2	...	...	...
7	1.3	.5	1	...	...	...	2.9	1.2	1	...	...	...
8	2.5	.	.	1.5	.5	...	2.2	1.6	.	4.0	2.0	...
9	1.8	.4	.	1.6	.4	...	2.1	1.4	.	3.3	1.7	...
10	1.4	.6	.	1.	...	...	1.5	0.5	.	2.0	...	...
11	1.3	.4	.	1.8	.3	...	1.3	0.4	.	1.8	0.3	...
12	1.0	.0	.	1.2	.3	...	1.7	0.6	.	1.3	0.5	...
13	1.2	.3	.	1.3	.4	...	2.2	0.4	.	2.0	0.0	...

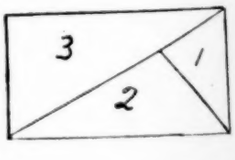
mented by a third and more difficult set, which would emphasize the correspondence between ability to learn and age.

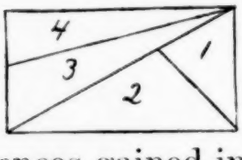
One of the anomalies of the learning test which surprised me at the time the tests were given and which is revealed to a certain extent in the tables is the excellent records often made by retarded children (note especially the case of the retarded child in the ten-year group, who was distinctly subnormal). The obvious explanation is that through the discipline of the school these children of weaker native ability have learned to direct their best efforts upon whatever is to be learned. They have gained skill in attacking the set task, and are thereby able to cope with their better endowed mates in a school environment, or one that resembles it.

6. Invention and Construction (problem tests.)

The next series is comprised of what one might term "problem tests." This term seems to fit the essential characteristics of the tests, which were planned to measure ability to use the elements of previous experience in new combinations for the solution of specific problems. They may also be called tests of constructive ability. Two types of problem test were given: (1) mechanical; (2) linguistic.

A. The mechanical. Test No. 12 of the Binet-Simon 1908 series was made the basis of three rectangular puzzles. (*a*) For the first problem we employed the divided rectangle just as it was used by Binet and Simon. The child is given an undivided rectangle and a rectangle divided along its diagonal. The divided rectangle is so placed that its normal position is not suggested. The child is then asked to put the two pieces together so that they will look like the first figure—the undivided rectangle. (*b*) For the second problem the rectangle was divided into three parts. These parts were given to the child, and he was again asked to put them together so that they would resemble the undivided rectangle. (*c*) A rectangle of the same size, but divided into four parts, was next given. The problem was similar to the preceding. We gave the series in the above order of graded difficulty for the purpose of determining whether the experiences gained in the solution of the first or of the first and the





second would be consciously applied in the solution of the third. While there may have been some gain in ability to solve the third through the successful experiences with the first and second, there were only two of the eighty children tested who saw the relation of the three figures to each other—one was a ten-year-old and the other a twelve-year-old girl. Both of these children were slow to react, but inclined to figure each step out before they made it. Triangles (1) and (2) of the third puzzle are of exactly the same size and shape as (1) and (2) of puzzle two, yet all of the children tested fitted and tried these triangles as though they had not just seen similar forms.

TABLE XI.

Rectangle Puzzles.

Unretarded.

Group Age.	First Puzzle. Av. Time. Sec.	First Puzzle. M. V.	Second Puzzle. Av. Time. Sec.	Second Puzzle. M. V.	Third Puzzle. Av. Time. Sec.	Third Puzzle. M. V.
6	37.6* / 18.4*	27.8 / 17.5	70.7†	35.8	173.0‡	122.5
7	13.3	3.2	65.7	29.6	175.9	55.2
8	6.6	4.6	90.5	42.0	185.0	95.7
9	2.9	1.9	41.1	27.3	145.6	79.2
10	2.1	1.1	89.3	34.1	112.3	59.9
11	1.0	0.0	51.0	9.3	128.0	72.0
12	1.0	0.0	25.4	14.2	66.7	27.0
13	1.0	0.0	33.6	24.8	47.1	42.0

Retarded.

Group Age.	First Puzzle. Av. Time. Sec.	First Puzzle. M. V.	Second Puzzle. Av. Time. Sec.	Second Puzzle. M. V.	Third Puzzle. Av. Time. Sec.	Third Puzzle. M. V.
8	4.0	4.0	65.0	....	Both failed.	
9	18.0	22.0	90.0	60	102.3	61.7
10	7.0	....	98.0	....	316.0	....
11	6.3	2.9	45.2	16.2	206.0	62.0
12	1.0	0.0	50.4	30.1	65.6	13.9
13	7.1	4.8	25.5	1.0	103.5	103.5

*A train of associations was set up in the case of one six year old child that so lengthened her time as to unduly lengthen time for whole group. If her record is eliminated the average for the remaining nine in the group is shown in the second set of figures.

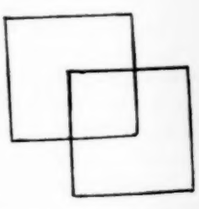
†One child failed.

‡Two failed.

The results from the first puzzle suggest the three stages of development noted in other tables, but the results as they

stand do not give unequivocal norms. The general irregularity and the high mean variation indicate that with this type of test the time factor does not afford the best measure of efficiency, although the puzzle-problem itself affords excellent criteria for judging of mental capacity. The differential in this test should be method of attack rather than time consumed in solution, or at least the time factor should merely be used as a supplementary measure. There were great differences in the readiness with which the problems were attacked; some children hesitated, thinking the difficulties were greater than they were; others mentally constructed each step before making the actual moves; in other cases association by similarity worked disadvantageously. Ruger's statement[4] was true of these children: "In general, the solutions were not the result of mere straight away thinking and the consequent formulation of a thorough-going plan of action, but were the outcome of an extremely complex interrelation of more or less random impulses and ideas." In the accidental solutions there was always some awareness of the relation of pieces just before the last piece was put in place. Ruger's observations again tally so fully with ours that we quote from him (p. 9): "Behavior of human subjects showed many of the features usually accredited to the behavior of animals in contrast with the human being. Acts which made no change in the situation whatever were at times repeated indefinitely and without modification. In practically all of the cases random manipulation played some part, and in many of the cases a very considerable part in the gaining of success."

A second set of mechanical puzzles was given. The first of these is Problem 8, used by Terman[5]. The problem is to trace the following figure without crossing a line, lifting a pencil or tracing any part twice. This calls for an initial formulation of the problem for successful solution, and practically rules out random movements.

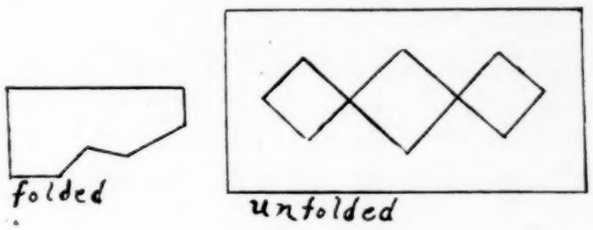


The second test in this set was No. 29 of the Binet-Simon 1905 series. A design is cut in a quarto-folded

[4] H. A. Ruger. *The Psychology of Efficiency.* Columbia Contributions to Philosophy and Psychology, 19, 1910, No. 2, p. 21.

[5] L. M. Terman. *Genius and Stupidity.* Pedag. Seminary, 13, 1906, 330.

paper and child asked to draw what he would see if the paper were unfolded. This necessitates visualization and the construction of the whole figure from a part, if problem is successfully solved.



The third test was No. 28 of the Binet-Simon 1905 series. It is called the interchange of the clock-hands. The child is asked the following question: "Suppose it is four minutes of three, can you see in your mind where the large hand would be and where the small hand would be?" "Now, suppose the large hand takes the place where you say the small hand is and the small hand takes the place of the large hand, then what time would it be?" Hands are also mentally interchanged for twenty minutes past six. To solve this problem the primary requisite is, of course, a fair degree of facility in telling time. In addition, there is required ability to reconstruct the clock face visually and to translate these visual images into terms of another visual image and, thirdly, to translate this second visual image into terms of time. There were two distinct types of successful solution of the clock-face problem: The younger children always separated the problem into its two steps; the children of the twelfth and thirteenth year groups were most of them able to interchange the hands at once without the use of an intermediate step.

In the case of the Terman puzzle, there was not a single instance of failure to grasp the situation—"see the trick," as one child expressed it—beyond the eighth year. This shows the Terman problem to be an excellent initial test in a graded

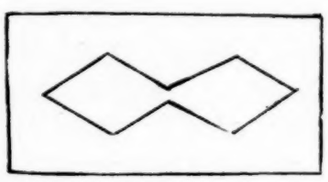
TABLE XII.

Mechanical Puzzles—Second Set.

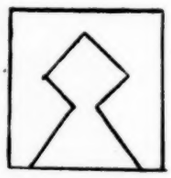
Unretarded.

	Terman.	Binet (cut design).		Clock Face.			
				A		*B*	
Group Age.	Complete Success.	Complete Success.	Partial Success.	Complete Success.	Partial Success.	Complete Success.	Partial Success.
6	1	..	..	..	..	..	..
7	7	0	2	2	0	2	0
8	5	2	2	5	2	7	1
9	8	2	4	4	2	5	1
10	9	2	5	6	2	6	2
11	5	3	0	5	..	5	..
12	8	2	4	5	..	5	..
13	7	3	3	7	..	7	..
			Retarded.				
8	0	0	0	0	0	0	0
9	2	1	1	0	1	0	1
10	1	0	0	0	1	0	0
11	5	2	0	1	1	4	..
12	4	..	4	4	..	3	..
13	3	1	1	2	..	2	..

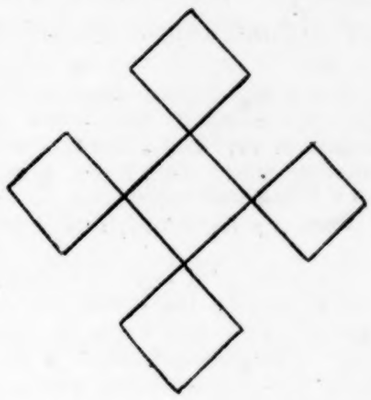
Not even the oldest group succeeded in making a perfect average for the solution of the problem in quarto-fold design. This problem can be correctly solved only by strong visualizers. A common drawing was of this form:



An earlier form was the result of visualizing but one-half of the problem; it was this shape:



Among the oldest groups the original figure was frequently elaborated in this fashion:



This tendency to elaboration was doubtless due to the influence of school work in design. This test depends altogether too much upon mental type to make it an accurate measure of general mental ability. The three well-defined stages of success noted previously are well brought out in the clock-face test: Children in the sixth and seventh years almost invariably failed; the children of the eighth, ninth and tenth years achieved a fair measure of success; those of the twelfth and thirteenth years not only succeeded, but almost always reached the solution in one step.

B. Linguistic Invention: Three tests were made of linguistic invention. The first of these was a modification of No. 26 in the Binet-Simon series of 1905. Children were asked to make sentences containing the three words, *boy, river* and *ball.* We substituted *boy* for *girl,* used in the Binet test. Since the ball is, and always has been, the boy's plaything rather than the girl's, experience and associations make this combination of three words more suggestive than that used by Binet.

We also increased the possibilities of the test by one more step, which was suggested by our experience with the six-year group. In presenting the test to these children we used not the unfamiliar word "sentence," but the familiar word "story." We asked for a story about a boy, a river and a ball. The child's fancy did not always stop within the bounds of one sentence, but carried the narrative to completion. We decided at once to modify the test by asking for the story or narrative from all of the groups. In the sixth, seventh and eighth years the story was given orally and taken down by the experimenter just as given by the child. From the ninth year on the children wrote their own stories. This explains the comparative brevity of those given from that time on. In order to illustrate the development of linguistic invention as shown by this test even better than it can be illustrated by

tabulated results, I give herewith a typical story from each group. The choice was difficult, for there were often several of almost equal excellence.

6th year. "Once upon a time there was a little boy and he had a ball and he went down by the river. The boy dropped his ball in the river and then he began to cry and a bird flew by and said: "Why do you cry little boy?" and then he said: 'Don't cry, I will get the ball out of the river for you." and the bird tried and tried and he couldn't get it out and a swan came by and said, "Don't cry little boy, I will get the ball out for you." So he got it out.

7th year. "A boy was playing with a ball by the river and the ball rolled in and he sat by the river and cried. A policeman came by and asked, 'Why are you crying'? and he said, 'My ball has rolled in the river and I can't get it out.' Policeman said, 'I'll go to the farm over there and get a rake' and he got it and the little boy began playing with the ball and it got to rolling and he couldn't get it."

8th year. "A boy threw his ball in the river. The boy wanted to get his ball out of the river. The river didn't want him to get his ball. The boy began crying because he wanted his ball and could not get it. The river laughed at him and said it wanted the ball. The boy had to go and buy a new ball, because he could not get his ball out of the river."

9th year. "Once upon a time a boy took his ball and went to the river. The boy threw his ball up and when it came down it fell in the river."

10th year. This boy tells of an actual experience, which was also drawn upon by one of the 11-year old children. "Once upon a time there was a fifth Grade base-ball team they played the third grade team out in flosmore the catcher had to catch by a river and every time the boy missed the ball it went into the River."

11th year. "Once a boy bought a new base-ball he was playing by the river with his new ball in his pocket all of a sudden his ball rolled into the river with a cry the boy dashed into the river and began to swim out in the direction that he had seen his ball go down into the water. At last he got it and he swam to the shore again and went home dripping wet." Except for the complete disregard of sentence form, this shows a considerable advance over the previous narratives.

12th year. There were several excellent inventions in the 12th year, but the following was the most original in form.

"There was a boy who had a ball,
and lost it in the river,
The boy found his ball when he grew tall
a floating in the river."

13th year. The following illustrates better than some of the longer narratives the control of sentence structure which has been acquired. "As a little boy was running down a hill, he saw a big red ball on the road side and thinking it would be a nice present for his little sister whose birthday came the next day he picked it up and walked home along the beautiful river bank."

The children seemed to enjoy this test, and as a rule had thought out their story and completed it in less time than they

required for the average test. We note, in looking over these stories, a development from the crude sentence strung together by "ands" to a closely-knit sentence. Another characteristic change is the transition from the fantastical type of story related by the six, seven and eight year old children to the extremely realistic, matter-of-fact style employed by the ninth, tenth and eleventh year groups. Another plane of invention, more flexible in style, is evident in the stories of the twelfth and thirteenth-year groups. After the eighth year there was not the slightest difficulty experienced by any of the children—if we except the cases of the retarded ones—in weaving a complete narrative about the three words.

TABLE XIII.

Narratives based on the words, boy, river, ball.

	Unretarded.				*Retarded.*		
Group. Age.	Failure.	Separate Sentence for Each Word.	Three Words in one Sentence. Sentences Unconnected.	Complete Narrative.	Separate Sentence for Each Word.	Three Words in one Sentence. Sentences Unconnected.	Complete Narrative.
6	2	2	3	3	..	..	..
7	1	2	3	4	..	..	..
8	..	..	2	6	1	1	..
9			1	6	..	..	3
10				9	1	..	..
11				5			5
12				6		1	3
13				7			3

Three children, two of the sixth-year group and one from the seventh-year group, failed in this test. The results (Table XIII) are subsumed under three heads: those cases in which separate sentences were made for each word, those cases in which the three words were easily woven into a sentence, but the sentences left unconnected, and the larger group, which achieved a complete narrative about a theme suggested by the three words. All of the children beyond the seventh year were able at least to build one sentence containing the three words, excepting one of the retarded children in the eighth year and the badly retarded child in the tenth year.

My second test of linguistic invention, the word-building

test, gave, on the whole, less satisfactory results. The list used contained the letters a, e, o, b, m, t. We followed the usual method in every respect.[6] The time limit was five minutes, though with the younger children this time was much longer than was needed, because the possibilities of their vocabularies were frequently exhausted in two minutes. None of the children seemed familiar with the game of anagrams; neither did they apparently call to their assistance the phonetic word-building exercises so frequently used in our schools.

TABLE XIV.

Word-building.

	Unretarded.					*Retarded.*				
Group Age.	Complete Failure.	Av. No. Words.	Max.	Min.	M. V.	Complete Failure.	Av. No. Words.	Max.	Min.	M. V.
6	8	2.	2	2	0	..	..	..	..	..
7	1	5.5	10	1	2.5	..	..	..	..	..
8	1	10.8	14	5	2.7	1	4	4	0	1
9	1	8.8	14	5	3.4	..	5	7	3	1.3
10	..	10.5	17	8	1.9	..	3	3	3	0.
11	..	7.	8	6	.6	..	6.8	12	5	2.1
12	..	13.8	17	11	2.2	..	7.6	10	3	3.1
13	..	11.8	17	9	2.8	..	8.6	14	3	3.8

The correlation in this case between efficiency and maturity is not so complete as in many of the other tests. Perhaps if all the children had received practice in similar exercises the results would have been more regular, but such practice would have been completely out of harmony with the general plan of the tests.

The third test of linguistic invention was the one familiarly known as the Ebbinghaus Completion Method. As used in these experiments it seems to provide a fair measure of the child's ability to imaginatively reconstruct and interpret the whole when a few of the elements are given.

It was first necessary to choose a selection which could be appreciated by the youngest group and would at the same time seem worth reading by the oldest. The elisions must not mutilate the text so that an adult would have difficulty in un-

[6] G. M. WHIPPLE. *Manual of Mental and Physical Tests*, 1910, p. 441.

tangling the meaning, nor on the other hand be so few that the thought would be obvious at a glance. The text we selected was: *"Where the Dandelions Went,"* with the same elisions as given in Whipple's *Manual,* p. 448. The story was not read; neither was it told to the children, but the text was placed before them with the prefatory remark that they would find there a story of a little boy and his mother, and that if they completed the story by filling in the missing words they would be able to tell what became of the dandelions. This test was not given to the sixth or seventh year group. Four in the eight-year group tried it, but the remainder found it too difficult. Three of the nine-year group, and also the retarded child in the tenth-year group, failed completely. All of the others attained a fair degree of success.

TABLE XV.

Completion Test.

	Unretarded.				*Retarded.*			
Group Age.	Av. No. Errors.	Max. No. Errors.	Min. No. Errors.	M. V.	Av. No. Errors.	Max. No. Errors.	Min. No. Errors.	M. V.
8	29	56	17	13.5				
9	23.8	34	17	6.5	20	20	20	0
10	15.	30	6	4.6	..	..	..	..
11	5.6	9	3	2.	21.2	34	9	6.2
12	5.7	11	1	4.2	10.6	13	6	2.7
13	6.6	12	3	2.7	12.6	20	7	4.4

There is the same manifest gain in power by the senior groups that was noted in other tests. The break here seems to come between the tenth and eleventh years rather than between the eleventh and twelfth.

(*Concluded in the November number.*)

A COMPARISON OF THE BINET TESTS OF 1908 AND 1911.[1]

CHARLES SCOTT BERRY,

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The extensive use of the Binet tests of intelligence published in 1908[2] has brought to light certain defects in this measuring scale. To correct these defects Professor Binet published in 1911[3] a revision of the 1908 series of tests. The tests as revised are given below:

THE 1911 BINET TESTS OF INTELLIGENCE.

1908. III.

1. Points to nose, eyes, mouth.
2. Repeats two numbers.
3. Describes pictures.
4. Knows family name.
5. Repeats sentences of six syllables.

IV.

1. Knows sex.
2. Names key, knife, penny.
3. Repeats three numbers.
4. Compares two lines.

V.

1. Compares two weights.
2. Copies square.
3. Repeats sentences of ten syllables.
4. Counts four pennies.
5. Solves card puzzle.

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[1]The writer wishes to acknowledge his indebtedness to Superintendent G. L. Chamberlain and to Principal Lombard of the Michigan Home for Feeble-Minded and Epileptic, and to Miss Carrie L. Dicken, principal of the W. S. Perry school of Ann Arbor, for assistance rendered him during the course of this investigation.

[2]BINET, A. ET SIMON, TH. *Le développement de l'intelligence chez les enfants.* L'Année psychologique, 1908, 14: 1-94.

[3]BINET, A. *Nouvelles recherches sur la mesure du niveau intellectuel chez les enfants d'école.* L'Année psychologique, 1911, 17: 145-201. This article contains the revised tests accompanied by a theoretical discussion; but it does not give directions for making the tests.

BINET, A. ET SIMON, TH. *La mesure du développement de l'intelligence chez les jeunes enfants.* Bulletin de la société libre pour l'étude psychologique de l'enfant. The revised scale is here given with detailed instructions for making the tests.

MICHIGAN STATE NORMAL COLLEGE
TRAINING SCHOOL DEPARTMENT.

		VI.
	1.	Distinguishes between morning and afternoon.
	2.	Defines by use.
VII, 4	3.	Copies diamond.
VII, 7	4.	Counts thirteen pennies.
	5.	Makes aesthetic comparison.
		VII.
VI, 1	1.	Shows right hand, left ear.
	2.	Describes pictures.
VI, 5	3.	Executes three commissions.
VIII, 2	4.	Counts stamps.
VIII, 3	5.	Names four colors.
		VIII.
	1.	Compares two objects from memory.
	2.	Counts backwards from twenty to one.
VII, 1	3.	Perceives what is lacking in pictures.
IX, 1	4.	Knows the date.
VII, 5	5.	Repeats five figures.
		IX.
	1.	Makes change.
	2.	Gives definitions better than use.
X, 2	3.	Names nine pieces of money.
X, 1	4.	Repeats months of year in order.
X, 4	5.	Comprehends easy questions.
		X.
IX, 6	1.	Arranges five weights.
New	2.	Copies design from memory.
XI, 1	3.	Criticizes absurd sentences.
	4.	Comprehends difficult questions.
	5.	Uses three words in two sentences.
		XII.
New	1.	Resists suggestion.
XI, 2	2.	Uses three words in a single sentence.
XI, 3	3.	Gives sixty words in three minutes.
XI, 4	4.	Defines three abstract words.
XI, 5	5.	Puts dissected sentences together.
		XV.
XII, 1	1.	Repeats seven figures.
XII, 2	2.	Gives three rhymes.
XII, 3	3.	Repeats sentences of twenty-six syllables.
XII, 4	4.	Interprets pictures.
XII, 5	5.	Solves problems of diverse facts.
		Adult.
XIII, 1	1.	Draws design of cut paper unfolded.
XIII, 2	2.	Draws reversed triangle.
*XIII, 3	3.	Gives difference between abstract terms.
New	4.	Gives difference between president and king.
New	5.	Gives sense of selection read to him.

*Given in modified form in the 1911 series.

It will be noted from an examination of the revised series that while the tests up to six years remain the same, five important changes have been made in the more advanced ages.

In the first place, nine tests of the 1908 series have been omitted. The omitted tests are: Under age six, "Repeats

sentences of 16 syllables" and "Knows his age;" under age seven, "Knows number of fingers," "Copies phrase" and "Names four pieces of money;" under age eight, "Reads a selection" and "Writes from dictation;" and under age nine, "Repeats days of week" and "Gives six memories." Binet omitted "Repeats sentences of 16 syllables" because there is a similar test under age five. The other tests he omitted because they are influenced to a great extent by instruction given in the home and school, and for that reason are not true tests of intelligence. Those who have done much work with the Binet tests will doubtless feel that the scale has been improved by these omissions.

The next important change is in the addition of four new tests. They are: Under age ten, "Copies design from memory;" under age twelve, "Resists suggestion;" and under adult tests, "Gives difference between president and king" and "Gives sense of selection read to him." "Gives difference between abstract terms," which was a test under age thirteen in the 1908 series, has been modified somewhat and placed under the adult tests. For a description of these new tests see the article by Goddard entitled "A Revision of the Binet Scale," *The Training School,* June, 1911.

Twenty-six tests have been transposed. The transposed tests are indicated in the revised series given above by the Roman and Arabic numerals placed at the left of the tests. The Roman numeral indicates the year and the Arabic numeral the number of the test in the 1908 series. For example, opposite test three under age six are the numerals VII, 4, which mean that this test, "Copies diamond," was the test four under age seven in the 1908 series. It is apparent that the largest number of transpositions is in the tests of the higher ages. Binet found that the tests for the years eleven, twelve and thirteen were for the most part too difficult. As a result he has given no tests for age eleven, and has placed all the tests except one which were under that age under age twelve. The tests for age twelve he has placed under age fifteen. And the three tests which were under age thirteen he has included in the tests for adults, meaning by an adult a person who tests over fifteen.

The next significant change is in the number of tests. In the 1908 series the number of tests varied from three under age thirteen to eight under age seven. In the revised series there are five tests under each age except age four, which still has but four tests.

The last important change is in the method of counting. The highest age under which the subject correctly performs all the tests, instead of all but one, is now taken as the base. In the 1908 series, if the subject, for example, correctly performed all the tests under age six, all but one under age seven, three under age eight and two under age nine, age seven was taken as the base and the subject was given credit for an additional year for every five tests correctly performed above that age. In the supposed case he has correctly performed five tests under the ages above seven; hence his mental age is eight. But by the new method of counting, six, the year under which he correctly performed *all* the tests, is taken as a base, and, as in the other case, he is given credit for an additional year for every five tests correctly performed above the age which has been taken as the base.

In order to show the comparative merits of the two measuring scales, the writer presents here the results he obtained from testing 45 children in the first four grades of one of the Ann Arbor, Mich., schools, and 50 defectives, inmates of the Michigan Home for Feeble-Minded and Epileptic at Lapeer, Mich. The tests on the school children were made only during school hours and in a schoolroom provided for that purpose, where the experimenter was alone with the subject. The conditions under which the defectives were tested were equally favorable. The tests were made with such care that the experimenter had no reason to think that the subjects tested did not do the best of which they were capable. The age of the child at his last birthday was taken as the basis of comparison; that is, if a child who was seven years of age at his last birthday tested between seven and eight, he was called seven.

The results obtained from the two series of tests made on the 45 school children are shown in the following two tables. Table I shows the results by the 1908 tests and Table II the results by the 1911 tests. The tables are largely self-explana-

tory. The Arabic figures at the top of the tables indicate the physical age and the Roman numerals at the left the mental age. The figures **in heavy-faced type** indicate the number who tested at age, *i. e.*, those who have the same physical and mental ages:

TABLE I.—Binet, 1908.

Mental Age.	Physical Age. 6	7	8	9	10	11	12	
VI	**0**							
VII	1	**7**	2	1				11
VIII	1	4	**9**	4	1	2		21
IX		1	3	**3**	2		1	10
X			1	1	**1**			3
Totals	2	12	15	9	4	2	1	45

TABLE II.—Binet, 1911.

Mental Age.	Physical Age. 6	7	8	9	10	11	12	
VI	1	1						2
VII	1	**10**	7	1	1			20
VIII		1	**7**	6		2		16
IX			1	**1**	3		1	6
X				1				1
Totals	2	12	15	9	4	2	1	45

About the same number test at age in the two tables—20 in Table I and 19 in Table II. But when we compare the number over and under age we find a considerable difference. In Table I there are 12 over age, *i. e.*, their mental age is greater than their physical age, while in Table II there are but four over age. In Table I there are 13 under age, while in Table II there are 22. These results show that the same subjects tested by the two measuring scales do not test alike, but test lower by the 1911 series.

From a study of the results as presented in these tables we are unable to tell how much the subjects differ in mental age as measured by the two scales, for the results are given in round numbers. For example, if six were taken as the base, and the subject correctly performs seven or eight tests under the ages above six, his mental age, as given in Tables I and II, would be seven, one year for each additional five tests, fractions of five being neglected. But if we would be more exact in comparing the results secured by the two measuring scales,

these fractions must be taken into consideration, so that in the above case the subject's exact mental age would be seven and two-fifths or seven and three-fifths years instead of seven. Taking the fractions into consideration, we find that the number of normals and defectives testing the same in both series, higher in the 1911 series, and lower in the 1911 than in the 1908 series, is as follows:

	Normals.	Defectives.
Same	3	2
Higher	0	0
Lower	42	48
Lower by one year or more	1	11

It is significant that not one person tested higher by the 1911 series than by the 1908, and that only three normals and two feeble-minded tested the same, all the rest testing lower from one-fifth to one and one-fifth years. On the average the normal children tested two-fifths of a year lower, and the feeble-minded subjects three-fifths of a year lower by the 1911 than by the 1908 tests.

In attempting to account for the difference in results we must bear in mind that all the questions omitted in the revised series of tests are from ages six to nine, inclusive, and that no new tests are added before age ten. This means, other things being equal, that of the two scales the 1908 will test the higher in all those cases where the subjects perform any of the tests omitted in the 1911 series above the age taken as the base. And when we examine the records of the 12 subjects that differ by one year or more in mental age, we find that if the questions omitted in the revised measuring scale had not been counted in the 1908 series, four of the 12 subjects would have tested the same by both scales, four would have differed by only one-fifth of a year, one by three-fifths of a year, while the remaining three would not have been affected. The disparity of results in these latter three cases can be explained by the different method of counting used in the revised series of tests. By the 1908 scale the highest age under which all the tests, or all but one, are correctly performed is taken as the base, while in the revised scale only the highest age in which *all* the tests are correctly performed can be used as the base.

Under the higher ages especially, where the tests are not so well graded, this method of counting may make a great difference in the results. For it not infrequently happens that the subject may perform all the tests but one under age twelve or eleven and not do so well under the next lower age. This was the case with these three subjects. The bases by the 1908 scale were twelve, ten and twelve, and by the revised scale the base in each of the three cases was eight. If the revised method of counting had been employed in the 1908 series of tests, the results would have been no higher than those of the revised series. Evidently in such cases the revised method of counting gives the more accurate results, for surely the subject should not be rated as twelve years mentally if he cannot perform the tests under ages eleven and ten.

Many of the tests of the 1908 series have been transposed in the revision of 1911, and these changes have in some cases produced a slight difference in results.

Unfortunately, the number of normal children tested was not sufficiently great for us to draw any conclusions as to the value of the transposition of tests that Binet has made in the revised scale. Neither can we throw any light on the value of the new tests, as only eight of our subjects tested above nine mentally.

In the 1908 scale the number of tests under each age varied from three under age thirteen to eight under age seven. This lack of uniformity made it possible in some cases for one subject who had performed fewer tests than another to rank as high mentally. For example, if one subject performed all the tests under ages six and seven, his mental age would be seven, but if another subject failed in three of the tests under age seven and one under age six, his mental age also would be seven, for six would be the base and he would be given credit for an additional year for the tests performed under age seven. This defect has been remedied in the revision of 1911 by having the same number of tests under each age except age four.

It seems to the writer that the revised scale of 1911 is an improvement on the 1908 tests of intelligence in the following respects:

1. The tests which were most influenced by home and school instruction have been omitted.

2. The change in the method of counting reduces the liability of error.

3. The same number of tests under each age makes it impossible for one subject to rank as high mentally as another if he has not performed the same number of tests.

4. By the revised scale the subjects do not measure as high mentally as they do by the 1908 scale. This is an advantage as far as the lower ages are concerned, as it is probably true that the tests of the 1908 scale for the lower ages are too easy.

It is greatly to be hoped that Binet's revised tests will come into general use. We need standards, and standards can only be secured by the use of the same series of tests under the most carefully controlled conditions on large numbers of normal children.

PEDAGOGY AT THE BERLIN PSYCHOLOGICAL CONGRESS.[1]

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The fifth congress of the German Society for Experimental Psychology was held in Berlin from the 16th to the 20th of April, 1912. The large attendance at the congress was due partly to the choice of location, but more to the growing appreciation of the theoretical and practical importance of psychology. Besides German psychologists, many representatives of the science from other countries (Münsterberg and Woodworth from America; McDougall, Myers and Spearman from England) and a number of distinguished educationists were present. At the last congress, in Innsbruck, borderland questions between psychology and psychiatry and between psychology and ethnology were prominent in the discussions, but at the present meeting pedagogical psychology and the applications of psychology to education were the topics of paramount interest. The pedagogical trend was impressed upon the visitor immediately on entering the building in which the congress was held. On the right as one passed through the large hall were collections of simple apparatus for experimental pedagogy and for instruction in psychology. At the left was the exhibit of the Institute for Applied Psychology, for which Lippman had prepared a very attractive catalogue that will be useful for subsequent reference. This exhibit contained what is probably the richest collection of materials for test experiments, psychological and pedagogical questionnaires, and methods of investigation and observation, that is to be found anywhere in the world.

Perhaps a third of the reports and addresses were more or less closely related to pedagogy. Of these we shall consider,

[1]Translated from the author's manuscript. J. C. B.

first, a group which emphasized the significance of psychological investigations for other sciences, pedagogy among them; second, a group of papers which dealt with some of the fundamental problems of pedagogy; and third, discussions of theoretical psychology which are of especial interest to educators.

One of the most noteworthy addresses of the first group was that of Marbe on the importance of psychology for other sciences and for practical affairs. Marbe reviewed practically all the applications which exact psychology (both experimental and statistical) has already found in the domains of natural science, medicine, linguistics, philology, literary science, aesthetics, history, pedagogy, jurisprudence, political economy and philosophy. His argument was concerned not with possibilities of the future, nor with the fundamental question whether and to what extent these sciences should be based upon a psychological foundation, but rather with the established results of investigations whereby psychology has come into practical contact with these sciences. He thus regarded psychology from the point of view of an auxiliary rather than a basic science. The address will appear in expanded form in the first number of the new journal, *Fortschritte der Psychologie und ihrer Anwendungen,* edited by Marbe and published by B. G. Teubner, Leipzig. It forms a brief and very readable compendium of applied psychology, and gives numerous references to the literature of the problems discussed. The manifold applicability of psychological investigations to other fields of learning gives rise to a demand for a more adequate consideration of psychology in the lecture courses and prescribed examinations of German universities.

The modern psychology of the thought processes and its bearing upon education were discussed by Külpe. He emphasized the fact that through the discovery of non-representative elements of consciousness, as determining tendencies, conscious attitudes, imageless thought, etc., the center of interest in experimental psychology has shifted from the problems of sensation and perception to those of the "complex" psychic processes, as German psychologists say. The modern psychology of thinking is of great importance for the theory of knowledge, aesthetics, logic and pedagogy. With reference to the

latter Külpe calls for more attention to abstract thinking to counteract the prevalent tendency to overemphasize concrete object-lessons, urges investigations of the different types of thinking, and demands the introduction or reintroduction of formal exercises in thinking—exercises in definition, in analysis and in reasoning. In the interest of will training he recommends the strengthening of "determining tendencies" by specific practice. Külpe's address has since appeared in the *Internationale Monatschrift für Wissenschaft, Kunst und Technik.*

Among the addresses which concerned themselves more strictly with educational psychology, Stern's report on psychological methods of testing intelligence deserves especial mention. By intelligence Stern means the *general* capacity to adapt onself mentally to new impressions, in contrast to *special* mental aptitudes. He reviewed the development of methods for testing intelligence, presented a somewhat detailed consideration of the Binet-Simon tests, and referred to the various correlations that have been worked out between the experimentally determined degree of intelligence and school standing, judgment of teachers, etc. In the ensuing discussion it was pointed out that the Binet-Simon tests were applicable only to the conditions of European and American civilization, and that other tests must be devised for studying the intelligence of primitive peoples.

The view that there is a general intelligence, distinct from special abilities, was also defended by Spearman in his interesting address on general mental capacity. At the outset he distinguished between three different theories as to the relations of single abilities to each other: The similarity theory, which assumes that high correlation exists only between those activities which are very similar; the type theory, which affirms that correlation of mental abilities is a function of certain types, and Spearman's own theory of "general intelligence." Spearman critically examined the mass of material presented in the literature of the past 32 years, and endeavored to demonstrate in it the presence of a "general intelligence" factor. He also included the physiological data that were favorable to his contention.

The problem of mental heredity was treated by the writer of the present report in a paper on "The Inheritance of Intellectual Capacities." He compared the school records of children, parents and grandparents, and found evidence of a rather far-reaching dependence of the attainments of children upon those of their ancestors. He also showed that this connection was by no means due to similarity of environment. Galton's law of ancestral heredity and the law of filial regression find confirmation in these results. The question as to the applicability of Mendel's laws must be left open for the present. In addition to this statistical treatment of the problem of heredity, the writer gave an account of school experiments testing the attainments of brothers and sisters of the same family, and discussed their significance for heredity studies. This investigation was unfinished when the congress met, but a complete account of it will appear in an early number of *Fortschritte der Psychologie und ihrer Anwendungen.*

The psychology of the choice of occupation was discussed by Maday of Prague. He pointed out the lack of accord which frequently exists between the occupation which one prefers and for which one is fitted and that which is forced on one, usually by social conditions. Adults find relief from the pressure of uncongenial callings in secondary occupations, sports and personal hobbies. The preferences of children for an occupation, according to a questionnaire of Maday's, depend on three things: Pleasure in passive movement from place to place (coachman, locomotive engineer), zest for fighting (soldier), and technical interest (builder, shipwright).

A more specific problem of psychological pedagogy was treated by Bühler in his address on "The Development of Abstract Thinking in School Children." He used Grünbaum's method in his experiments. A group of figures was shown to the pupils, and they were later called upon to recognize and identify certain members of the group when shown with other figures. Bühler found a striking increase in ability in the earlier school years, but in the later years the increase was less marked. The results showed striking individual differences in mental endowment. Bühler raises the question whether the improvement was due strictly to advance in age

or in part to school training. To decide this point he intends to have comparative experiments undertaken in South Africa on children who have had no school education.

Of the strictly psychological investigations that were of educational interest we may mention the papers on the psychology of memory. Rupp presented a systematic survey of the characteristics of memory. He considers the elementary functions of memory to be two in number—perseveration, or the tendency for an impression to persist in consciousness, and association, or the connection between two or more impressions. The psychic effects of these elementary factors are of a threefold nature: They may bring about (1) the revival of the experience; (2) a mere increase in receptivity (susceptibility) for this or a similar impression; (3) the arousal of the consciousness of familiarity on the repetition of this or a like impression.

G. E. Müller reported some interesting results of experiments carried on by one of his pupils. If a different kind of mental activity is interposed between the learning of a series of syllables and the reproduction of the series, the efficiency of the reproduction is diminished (retroactive inhibition). The experiments reported by Müller, however, show that such inhibition fails to appear if the memorized syllables are merely recognized and not actively reproduced. Recognition and reproduction, therefore, evidently depend upon different conditions.

Aall of Christiania found that stories and other memory materials are retained better if the subject is told beforehand that he will be required after the lapse of a considerable interval to reproduce what he has learned than if he is told that the reproduction will be called for within a short time. In one series of experiments he informed his subjects that they would be questioned the next day about what they had seen and heard, while in another series the time was set at four weeks. The next day he purposely neglected to ask for the material of the first series, but tested for both series at the expiration of four weeks. The material learned with the expectation of delayed reproduction was rendered more accurately than that learned for reproduction the next day.

Of the remaining addresses mention may be made of one by Wertheimer on the psychological analysis of the results of certain cortical lesions. The speaker made it seem probable that the disturbance in reading known as alexia is due not to any rupture of the associative connections between the optical and the acoustic-motor centers, but rather to a disturbance of "form perception." Alfred Lehmann reported a very carefully-conducted investigation on metabolism during mental work. By means of highly-refined methods he was able to establish the fact that in learning series of syllables and in adding with the Kraepelin reckoning books the excretion of carbonic acid is greater than during mental rest. In fatigue there is an analogous change of metabolism.

A glance over this brief report of the important pedagogical problems considered at the Berlin congress shows that not only was there evidence of a continued and intensified activity in the study of old questions, but that many new questions were raised which call for the application of exact methods. New demands for pedagogical investigation were not lacking. One need only refer to Külpe's observations, which make it appear that the fundamental principle of modern instruction, the principle of emphasis on sense perception (Anschauung), is in need of revision. In the extension of educational psychology to fields which heretofore have been accessible only to rough, casual observation lies the guarantee for the future of our science. For science, be it remembered, grows at its borders.

COMMUNICATIONS AND DISCUSSIONS.

THE EFFECT OF POSITION IN A MEMORIZED SERIES.

During the first half of the year 1912 an experiment was carried on under the direction of W. H. Winch to inquire whether the better way of learning tables was by rote or by practice. At one stage of the experiment the boys were given copies of their thirteen times table, which they had themselves constructed upon slips of paper, and were allowed six minutes to learn the table. Then, immediately afterwards, eight items of the table from thirteen twos to thirteen nines were questioned upon, though not in consecutive order. The writing down of the eight answers took one minute. This was done on four occasions on the mornings of the 25th, 29th, 31st of January and 2d of February. On the morning of the 5th, 7th, 9th and 12th of February similar work was done, but instead of using the thirteen times table the fourteen times table was used.

It was next necessary to mark these tables for the purpose of totaling results, and during the marking it struck me that there seemed to be a frequent recurrence of the same item of the table that was wrong. This idea gained ground as more papers were marked, until I decided to tabulate the whole of the results to see if the figures obtained would substantiate my general impression.

The subjoined table was drawn up in the following manner: After all the papers had been marked I decided to note every time an item of the table was put down wrongly. Hence the figures show the total number of mistakes made by the whole class of 26. When the error totals of the thirteen times table are examined it will be noticed that the errors for each item of the table are as follows:

2 times	3 times	4 times	5 times
3 errors	16 errors	29 errors	32 errors
6 times	7 times	8 times	9 times
32 errors	25 errors	21 errors	12 errors

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From this it seems that the learner fixes the beginning and the end of the table and remembers them fairly well, but the middle of the table is much more doubtful.

On examination of the totals for the fourteen times table a similar development of errors will be noticed, for the figures run:

2 times	3 times	4 times	5 times
10 errors	24 errors	30 errors	24 errors
6 times	7 times	8 times	9 times
37 errors	36 errors	10 errors	10 errors

One break occurs in the series, however, at the five times item, but probably this may be accounted for by the arresting nature of the number seventy, with its easily-remembered nought:

Thirteen Times Table.

Date, 1912.	2 times.	3 times.	4 times.	5 times.	6 times.	7 times.	8 times.	9 times.
25-1	3	7	16	13	14	14	11	5
29-1	0	5	6	5	10	6	4	3
31-1	0	3	3	11	3	3	5	2
2-2	0	1	4	3	5	2	1	2
Total:	3	16	29	32	32	25	21	12

Fourteen Times Table.

5-2	4	11	9	9	10	9	4	5
7-2	5	6	6	6	7	15	4	2
9-2	0	2	8	4	10	6	1	0
12-2	1	5	7	5	10	6	1	3
Total:	10	24	30	24	37	36	10	10
Aggregate:	13	40	59	56	69	61	31	22

From the above results we might draw a conclusion of service in the learning of new tables: When the table is given to be momorized it would be well to change the order of the items now and again so that the middle of the table obtained an equal share of attention. Thus, instead of beginning with four times two and ending with four times nine, a change might be made by beginning the table with four times six and ending with four times seven, and so on for the next change, so that the middle items of the table (seen from the figures of the investigation to be overlooked) might come into the more favorable positions of beginning and end.

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RULES *VERSUS* DRILL IN TEACHING SPELLING.

The following results were obtained in a parallel-group test of rules *versus* drill in teaching spelling to eighth-grade pupils. The groups were divided upon the basis of grades secured in a common test. There were 16 pupils in each group. Group I was then given three 25-minute exercises, exclusively devoted to drill; Group II was given three 25-minute exercises, in two of which rules were taught and associated with type words and a minimum of drill required; a third period was devoted largely to drill. The results follow:

	Average in grouping test.	Average and A. D. in "B" test.	Average and A. D. in "C" test.	Average and A. D. in "D" test.	Average and A. D. in "E" test.
Group I (drill).....	69.85	99.37	99.	61.56	76.
		0.62	1.75	11.87	7.43
Group II (rules).....	70.44	96.	93.75	67.5	74.
		5.	6.62	10.09	10.56

The "B" test was given at the close of the third 25-minute period to both groups. The "C" test consisted of the same words as the "B" test, but was given five days later; both groups show a slight falling off in efficiency, but the drill group has lost relatively less than the rules group. The "D" test was made up of new words similar, however, to those of the "B" test, and, like the "B" test, was given at the close of the third 25-minute period; the rules group has a distinct advantage here. The "E" test consisted of the same words as the "D" test, given five days later; the drill group seems to have recovered the ground lost in the "D" test; the rules group gains a better average than in the "D" test, but the influence of the latter test is not so strongly marked as with the drill group.

It should be said that no time was given to the words being taught except during the 25-minute exercises. It should also be noted that each group was taught by a separate teacher, who did his best to "get results" under the conditions set by the experiment. The results in the "B," "C" and "D" tests are what might be expected on *a priori* grounds. The approximation of the two groups in the "E" test and the slightly poorer record of the drill group after its good

showing in the "D" test suggests an influence of intellectualizing drill processes that will be further investigated.

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SOME RESULTS IN MANUAL TRAINING.

At the end of the school year 1912 it was found that boys who had been working double periods in manual training did not come up to the requirement of doing twice as much work as those who worked single periods. Throughout the year 14 boys worked single periods and 9 boys worked double periods.

A hasty inspection of the time and grade cards (form shown on page 451 of the *Manual Training Magazine* for June, 1912) seemed to indicate that in general boys who worked double periods needed more time to complete a given exercise than those who worked single periods, and a careful comparison was made of the time and grades on seven drawings and four bench exercises which were done by all of the pupils. The results are shown in the accompanying table of averages.

Every record used for comparison was made during the same semester, in regular time and sequence, and under practically the same conditions. Records of boys who were irregular in attendance or who did not complete the year's work were not used:

TABLE OF AVERAGES.

Drawings and Exercises.	Time in periods required by boys working		Grade of boys working	
	One period.	Two periods.	One period.	Two periods.
Plate No. 1	9.75	6.00	78	71
Plate No. 2	6.72	6.80	80	78
Plate No. 3	7.63	8.75	80	77
Plate No. 4	7.84	10.60	75	71
Plate No. 5	5.57	12.00	73	75
Plate No. 6	3.25	3.40	85	81
Plate No. 7	3.25	3.00	85	86
Halved Splice	6.60	11.00	77	71
Splayed Splice	6.00	8.57	81	72
M-and-T Joint	5.60	7.14	78	78
K, M-and-T Joint	5.60	10.50	76	72
Grand Averages	6.16	7.98	79.8	72.9

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ABSTRACTS AND REVIEWS.

WILLIAM HENRY PYLE. *The Outlines of Educational Psychology.* Baltimore: Warwick & York, 1911. Pp. X + 254. $1.25.

This, the first general textbook in educational psychology to appear in America, is a brief, concise outline of the subject. The author has crowded into a very few pages an immense quantity of material valuable to students of education and to teachers. His style is clear, and his method of presentation, although sometimes dogmatic, is on the whole effective. In spite of condensation, the text proves unusually readable. Indeed, the reviewer has discovered that the average college student takes considerable satisfaction in most of Professor Pyle's chapters.

After describing the educational situation and defining education as "the process of preparing the individual for his life in society and of making a better society" (p. 3), the author presents in eight successive chapters certain of the most essential facts concerning the nature of the individual. A chapter is devoted to the discussion of body in its relations to mind. Another to the facts of heredity and their significance for education. Then follow six chapters on the instincts, which are considered under the headings individualistic, social, environmental and adaptive.

The remainder of the book is devoted to discussions of the nurture and of modes of directing the physical and mental development of the individual. Habit is discussed with respect to its chief characteristics, its relations to educational practices and to moral standards. Considerably less space is devoted to the treatment of habit and the various processes of learning than to instincts. Under the heading memory the principal results of studies of the learning process as well as of studies in the psychology and pedagogy of memory are presented. The reader is almost certain to feel the inadequacy of this chapter and to wish that it might have been further elaborated; but in criticizing the author we should keep in mind the fact that the text is intended not as an elaborate manual or an encyclopedic work, but as a sketch of the scientific groundwork of education, the elaboration

of which is left to the reader, and more especially to students in whose hands the text should be placed.

Brief chapters on attention and on fatigue complete the outline. Neither of these subjects is discussed very fully, although with each the author has dealt interestingly and suggestively.

At the end of each of the 15 chapters of Professor Pyle's textbook appears a list of "questions and topics for further study." These questions, we are informed, are such as have been asked by the author's students in educational psychology. Many of them are extremely good questions, although not a few are indefinite and discouraging, because it is impossible to give satisfactory answers. It may safely be said that the reader who carefully searches out from his own mind or from the literature of biology, psychology, sociology and education the materials which make possible the answering of these questions will have gained a most valuable knowledge of the scientific basis of educational practices.

A list of references to systematic treatises and original reports of experimental work appears at the end of each chapter. These references are well slected, and are invaluable to the student. English publications are used almost exclusively.

As the teacher or student casually examines this textbook he is certain to be surprised by the amount of space devoted to the instincts, and, after carefully reading the book, he is likely to conclude that it is quite disproportionate. Interesting and valuable as are the chapters which are devoted to the innate capacities of the individual, it seems only reasonable to object that more space relatively should have been given to the facts and laws of modifiability and to the varied problems and results of experimental education. The book may be adversely criticized on the score of its omissions. Every reader who is familiar with the materials of educational psychology and of the recently developed experimental pedagogy must regret the complete neglect of many important topics and aspects of these subjects. Nevertheless, the reviewer is convinced that the book will prove extremely useful in the hands of every intelligent teacher of educational psychology or of pedagogy, and he most heartily commends it to all who are interested in the discovery of an adequate scientific basis for our educational practices.

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J. J. Van Biervliet. *Premiers Elements de Pedagogie Experimentale (a l'usage des Ecoles Normales). Les Bases.* Preface de M. Gabriel Compayre. Paris, 1911, pp. 335. Bound in paper, 7 francs.

This book is designed as a general introduction to experimental pedagogy. The first chapter is a general discussion of education. The author parts company with Binet, who said that the old pedagogy ought to be completely suppressed because it was based on preconceived ideas. Van Biervliet affirms that pedagogy has progressed, although it is still far from perfect. A universal criticism of the work of the school is that it is painful, not pleasurable, uninteresting, unhygienic and stereotyped. The principal aim of primary education, the formation and the healthful development of the intellectual faculties, has been imperfectly realized. The school fails to prepare for life. The two fundamental elements of classical pedagogy—introspective psychology and methodology deduced from the experience of pedagogues—are largely responsible for this condition. He would replace the first by the experimental psychology of childhood, and the second by experimental pedagogy.

The remaining chapters of the book are devoted to the methods of scientific psychology and the ordinary topics that are usually considered in a general elementary textbook in psychology. One hundred and fourteen pages are given over to the methods of scientific psychology and the nervous system. The author makes liberal use of experimental evidence of a general character. Little of it has any direct bearing on the work of the school.

The book is readable and interesting as an introduction to general psychology, but the writer seems to have made no contribution to experimental pedagogy. A second volume will aim to show the relation of psychological experiments to pedagogy. It would be well perhaps to postpone final judgment until a second volume appears. If we were to compare his first volume with the first volume of Meumann's *Experimentelle Pädagogik*, revised edition, Leipzig, 1911, it would not seem to have much promise. It has a tendency to consider practical problems through a telescope. A bibliography would have made the book more valuable.

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GEORGE TRUMBULL LADD. *The Teacher's Practical Philosophy.* New York: Funk & Wagnalls Company, 1911. Pp. 331.

"Teaching is a species of conduct, involving peculiarly close relations between two classes of persons; and all conduct is of necessity a moral affair." Such is the keynote of this series of talks to teachers, originally given under Government auspices in India and Japan. It is a note that needs to be sounded in educational circles at home at the present time, when the tendency is so strongly in the direction of method and theory of practice in teaching that we are in danger of forgetting all personal and moral relations of teacher and pupil. C. E. S.

A. F. LAZURSKY AND A. P. NETSCHAJEFF, Editors. *Mental Life of Children.* With 91 illustrations in the text (Russian). Moskow: Antik & Co., 1910. Pp. 282.

The nine papers here presented are good summaries of modern investigations on school children and on children below school age. The editors call the papers "sketches in educational psychology." The book is published as a monograph of the Pedagogical Academy in St. Petersburg, and is a noteworthy contribution to Russian child study and experimental pedagogy.

The first paper, by N. Rumyanzev, the author of "Paidology" (St. Petersburg, 1909), deals with *past and present methods in studying the mental life of children* (pp. 1-55). Such a historical account is undoubtedly needed, and this paper furnishes a useful beginning in that direction, but the full history of the present epoch-making movement toward the systematic scientific study of school children is still to be written.

The second paper, by M. Steinhaus, discusses *heredity and environment* as educational factors (pp. 56-91). The title of this paper is misleading. It is a conglomeration of old hygienic data (Uffelmann is for him a great author on the care of babies!) and very meager applications, based mainly on second-hand information. The scientific treatises on heredity, such as those of Galton and Alphonse De Candolle, are not even mentioned.

The third paper takes up *memory* (pp. 92-114), with especial reference to the investigations of Ebbinghaus, G. E. Müller's school, Meumann's school, Netschajeff, Binet and Henri, and others. This and the following paper on *attention* (pp. 115-144) were written by A. Theoktistov. Both papers are good summaries, but many new

authors in those large fields of scientific investigation are ignored. The paper on attention includes the physiological and psychological interpretation of attention as an act, and its dependence upon the conditions of daily life. The author reviews the experimental investigation of attention in school children (Meumann's school), the interest and ideals of pupils, etc.

The fifth paper, by S. Popic, treats of the *development of imagination* in children (pp. 145-175), with especial reference to ability in drawing, as indicated in the recent studies of Stern, Kerschensteiner, Levenstein, Meumann, and others. The sixth paper considers *children's plays* (pp. 176-199). The author, M. Alexandrova, is much interested in the recent studies on the play of babies and school children. A photograph of Karl Groos is reproduced, and the article contains many illustrative pictures.

The seventh paper, by Y. Evergetov (pp. 200-220), gives an account of the development of the *child's vocabulary*, with frequent reference to C. and W. Stern's book on "Kindersprache." There is a picture of Professor W. Stern.

The eighth paper (pp. 221-256) was written by V. Rachmannova, and deals with the *main periods in the development* of the mental life of children. The last paper, written by N. Rumyanzev (pp. 257-282), presents studies of *children's character and personality*, including experimental investigations of the individuality of children.

The bibliographic references of these authors show that Russian pedagogical literature is extensive and up-to-date, including many translations of classic and modern educational works, and the whole book gives evidence of a vigorous movement in Russia for the scientific study of the child mind.

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W. H. WINCH. *When Should a Child Begin School?* Educational Psychology Monographs. Baltimore: Warwick & York, 1911. Pp. 98. $1.25.

This monograph is an inquiry concerning the relationship between the age of entering school and subsequent progress or attainment. The author's method is statistical. Conclusions are based on coefficients of correlation derived from data collected over a wide area and from greatly varying situations. The conclusion "that from the entrance age of three to five, early entrance confers no intellectual

advantage on the child, either in his infant school work or in his subsequent progress in later school life," is the one we should have expected. Nothing that schools can do for children between the ages of three and five can ever be expected to offset individual differences which are due to heredity. Add to this fact the commonly accepted belief on the part of teachers that children cannot be expected to do much intellectual work until after they are five and any advantage which might be supposed to accrue to those entering earlier disappears entirely. Probably the best age to send a child to school is to be determined largely by the system of instruction organized in the schools which he is to attend. The writer believes that there are school systems where most children will be handicapped by entering after five to five and a half years, simply because the first serious year's work has been adapted to children of this group. In other school systems children enter a year or more older and complete a course of study as significant in a correspondingly shorter period. In the second type of school system the first year's serious work is adapted to the most mature children.

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WILLIAM JAMES. *Some Problems of Philosophy:* A Beginning of an Introduction to Philosophy. New York: Longmans, Green & Co. Pp. 237, xii.

The charge made against "Pragmatism, a New Name for Some Old Ways of Thinking," when it appeared in 1907, that many readers would think that they understood it when they really did not understand it, will not hold for this work by Professor James. He first named it an "introductory text-book for students in metaphysics," and when he left directions for its publication in its fragmentary and unrevised form he wrote, "Call it 'a beginning of an introduction to philosophy'; say that I hoped by it to round out my system, which now is too much like an arch built only on one side."

The author's viewpoint appears in the statements "Philosophy in the full sense is only *man thinking,* thinking about generalties rather than about particulars. I propose in this book to take philosophy in the narrow sense of metaphysics and to let both religion and the results of the sciences alone."

The problems considered are grouped under the terms being, percept and concept, the one and the many, novelty in relation to the infinite and to causality.

The two "chief rival attitudes towards life," rationalism and empiricism, with their many variations, are traced through the history of philosophy in a somewhat disconnected but very illuminating manner. The author's own emphasis upon pragmatism and the equally important though less commonly discussed "pluralistic or melioristic universe" constantly reveal the "attitude" of the book.

There is an appendix on "Faith and the Right to Believe," a reprint of a syllabus used in introductory courses at Harvard.

Professor James is, as usual, frank in his acknowledgments of indebtedness to others, notably here to Renouvier and Bergson.

FRANK A. MANNY.

HUGO MÜNSTERBERG. *Experimentalpsychologie und Berufswahl.* (Reprint from Zeits. f. Päd. Psych. u. exp. Pädagogik. January, 1912). P. 7.

The writer describes the development in America of schemes for guidance in choice of vocation, with special reference to the Boston bureau, instituted by the late Professor Parsons. This bureau undertook on the one hand to collect detailed information with regard to the requirements, the conditions for success, the outlook for advancement, etc., of numerous occupations, and on the other hand to discover for the individual applicant his capacities and incapacities, his interests, his tendencies—in a word, his physical and mental fitness for this or that calling. Parsons tried at first to determine this fitness by directing the individual to fill out at length answers to a printed series of questions. The difficulty here is obvious. One asks the applicant to tell one what the applicant comes to have discovered for him. The dilemma led naturally to the quest for a solution by appeal to the laboratory psychologist. Whatever may be the ultimate worth of mental tests for schoolroom practice, it is certain, in Münsterberg's opinion, that properly devised tests will yield a richer return when used for the determination of capacities suited to specific callings—presupposing a preliminary analysis of the mental functions demanded in the several callings and a suitable adaptation of the tests to the results of this analysis. Blunders are to be expected, but progress is as certain as it is necessary.

The writer also argues that, by means of this process of analysis, it is feasible to test by very simple means the ability implied in handling a very complex situation in actual life. For example, many callings put a premium upon the ability to "keep one's head"

in the face of a novel complex situation—in other words, to pass a quick and reliable judgment. Münsterberg has devised what he terms "The Situation Test" to determine the individual's manner of meeting a complex situation. On each of 24 cards are printed 48 letters, arranged in chance distribution, but with the letter A, E, O or U in predominance—the degree of predominance differing somewhat on different cards. The subject sorts the cards into four piles, according as he judges (by impression, and not by counting) whether A, E, O or U predominates. The results are scaled in terms of speed and of accuracy of his decisions.

In the light of previous experimental work on the transfer of abilities, it is probable that many psychologists will need factual evidence before they are convinced that a test of speed and accuracy of a given individual in card-sorting can yield any information of value as to the speed and accuracy of decisions passed by the same individual under the concrete conditions of different industrial and professional callings.

The rise of interest in vocational psychology is due, in part, as the writer shows, to the work of Taylor and others in developing and applying the doctrines of "scientific management." G. M. W.

J. E. W. Wallin. *Experimental Oral Euthenics.* Reprinted from *Dental Cosmos,* April and May, 1912. Pp. 32.

This study is significant, both in its direct results and in its contribution to the method of experimental education. The author attempted to determine the effect of proper care and treatment of the teeth upon the improvement of mental traits and capacities in school children. The functions tested were (1) visual memory (reproduction method), (2) rapidity of thought (verbal associations), (3) speed and accuracy of adding columns of one-place digits, (4) speed and ability in association as measured by the "opposites" test, and (5) speed and accuracy of visual discrimination (A-test). The pupils were tested in May, before dental treatment began; at the opening of school in September, and in the following May. The dental treatment consisted in putting the teeth of the children in good condition, giving directions and furnishing materials for keeping the teeth and gums clean, and demonstrating proper methods of mastication. A monetary reward was offered to all who remained in the experimental class and followed the hygienic directions through the year, a school nurse visiting the homes and "checking" the fidelity of the children.

A control-group was planned for, but unfortunately this feature of the investigation could not be carried out. The group tested consisted entirely of retarded pupils. At the close of the year it was found that the average member of the group had improved about 50 per cent. in all the tests, and the author believes that this improvement can be traced largely to the beneficial influence of the dental hygiene. Although the group was made up of "repeaters," only one of the twenty-seven pupils failed of promotion at the close of the year. Regularity of attendance was improved and truancy eliminated. It is to be deplored that the parallel control-group could not have been organized and tested, for we have now only indirect means of inferring how much of the improvement was due to practice and incubation effects. Notwithstanding this vital defect, however, the study is most valuable and suggestive, and will serve as a starting point for future investigations of a similar character. It might be added that more detailed accounts of the dental treatment, and especially of the means by which the out-of-school phases of this treatment were "checked," would aid the reader in evaluating the results. W. C. B.

WILLIAM STERN. *Die differentielle Psychologie in ihren methodischen Grundlagen.* Leipzig: Barth, 1911. Pp. 503. M 12.

In 1900 Stern's book, *"Ueber Psychologie der individuellen Differenzen,"* appeared. When, some time ago, a new edition was asked for, Stern decided that the progress in this field had been so great that an etirely new book, with different aims, was needed; hence the present book. The older book dealt with beginnings and hints as to lines of development, but this book attempts to ground a new psychological science, and, therefore, the treatment of the subject is entirely different. Here we find the emphasis upon a discussion of the methods, aims, subject-matter, divisions and boundaries of the new science of individual differences rather than upon the enumeration of special results thus far attained.

In subject-matter we have the whole field of individual variations. While general psychology ignores differences in order to reach common characteristics and thus develop laws and principles, individual psychology takes for its subject-matter these variations, their kinds, degrees, causes and laws, and the individuals who exhibit the variations. From the practical point of view this science aims to tell us how to know, judge, classify and use men individually or in groups.

and to understand the interaction of men upon one another as it occurs, for example, in education, law and medicine.

Individual and *characteristic* are the two chief concepts of this science. Characteristics are of three types: *phenomena* or immediate physical and psychical experiences as such, *acts* or synthetic groups of activities with a definite direction or goal, as digestion or walking, and *dispositions* or the potential and chronic, instead of acute, phases of experience, as temperament, character, inheritance, genius, etc.

The whole subject of individual psychology is divided into four main divisions, based upon the fact that we can study four different relationships between characteristics and individuals. The first division, called *variation,* is the study of one characteristic in many individuals; the second, named *correlation,* is the study of two or more characteristics in many individuals; the third, christened *psychography,* is the study of one individual in regard to many characteristics; the fourth, called *comparison* (Komparation), is the study of two or more individuals in regard to many characteristics.

The first part of the book deals with the methodology of the subject. The usual psychological methods are studied and their application to individual psychology discussed at length. Then the methods more peculiar to this field, as, for example, the test, questionnaire, historical methods, etc., receive consideration. To this treatment the author devotes 120 pages. The second part of the book deals with the first two great divisions of the science, variation and correlation, and includes 160 pages. Among the topics discussed are total and partial variation, the normal, the subnormal, the supernormal, psychological types, subdivisions of types, statistical treatment of variation, variability, correlation, aims of correlation and correlation statistics. The third part of the book deals with the other two great divisions of the subject, psychography and comparison. Here the problem of individuality, the aims of psychography, the psychogram (account of an individual gained by psychographical methods), the psychographic scheme to be followed in getting the psychogram, the comparison of the psychograms of different individuals, and other problems are discussed. The fourth part is a very full, classified bibliography of the whole subject. In about 120 pages the author presents an exhaustive list of those books which bear directly upon individual psychology and a wide selection of books that touch upon certain aspects of the subject.

It is impossible in a brief review to give an account of the variety of classifications and methodological distinctions that the author makes. The whole book gives evidence of the earnestness with which Stern has set about the task of emancipating this branch of psychological study from the mother science, and giving it a logical basis and framework for future development.

C. L. VAUGHAN.
Brooklyn Training School for Teachers.

ANDREW FLEMING WEST. *Education and Intelligence.* Reprint from the New York Times and Philadelphia Public Ledger of September 23, 1911. Pp. 16.

Here the dean of the graduate school of Princeton University relieves his mind of a number of disturbing considerations about our educational system and its output. He thinks the irreconcilable differences among educated men and the chaotic condition of educated opinion are due to the "patent fact that a good many of our so-called 'educated men' are not really intelligent; that they are, in fact, men of unintelligent intellectual behavior, some of them superficially versed in a number of things somewhat badly understood, some of them sharply clear in a narrow way." Dean West says he is not talking about stupidity, but about the unconscious ignorance of the supposedly educated man, who "utters what he thinks, supposing it to be what he knows."

We do not follow the argument very clearly from this point on, being doubtless unintelligent ourselves, but it appears that our educational system has been equipped with clever machinery, but is not run with intelligence. We are afflicted with the "vagaries of 'child psychology' and the fads which now beguile childhood with the notion that organized play is study." We secure uniform, machine, but mediocre, results. We strive blindly to be practical, useful, vocational, but forget that the 'something more' is more important than breadwinning. Particular knowledge is not enough. Educated men should also be intelligent.

As Dean West admits that education "may tone, but cannot destroy," the natural temperamental differences in men, and that "the errors of crass untrained ignorance," like dullness itself, seem to be ineradicable, he might have helped us out by laying down a recipe for securing general attainment of the blessed intelligent education that he desires.

CORNELIUS HOOD.
Cornell University.

THE JOURNAL OF EDUCATIONAL PSYCHOLOGY

INCLUDING EXPERIMENTAL PEDAGOGY, CHILD PHYSIOLOGY AND HYGIENE, AND EDUCATIONAL STATISTICS

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EDITORIALS.

PSYCHOLOGIST VS. CONSULTING PSYCHOLOGIST.

The modern science and art of treating mental diseases is founded upon psychology. Although applied science in this field is truly in the inceptive stage, a sufficient foundation has been laid to encourage the employment of psychological technicians in institutions and organizations which deal with mental derangements. The psychologist will never find himself in the institutional work so long as he regards himself primarily as a research man. To get professional standing for applied psychology the typical representative of this work must devote himself primarily, consistently and by preference to the routine of care and treatment. The time has now come for practical technicians in applied psychology who are not primarily research men, consulting psychologists or physicians. Let us call them simply *psychologists*.

Such a technician may have a wide field of usefulness, *e. g.*, as scientific expert in institutions he might sift the results of research

in applied psychology and adapt them to specific needs; he might be detailed to devise and test new psychological methods of examination and treatment; he might act as expert in the psychological study of special cases; he might offer to nurses and attendants courses of instruction from the point of view of applied psychology; he might conduct psychological research with a distinctly practical, usually immediate, end in view, and he might serve as representative of his institution in its relation to institutions for research and other theoretical and applied work in psychology.

The demand for preparation of such a psychologist must not be extravagant; the training in laboratory psychology should be thorough, but a full medical course is not required. Women might well qualify for the position and find it an attractive field. The rank and salary should be about that of a physician, in order to give the profession stability. His position must be recognized as that of practical psychologist—not superintendent, examiner or physician, or a substitute for any of them. Yet, as technician, the psychologist is at the command of the superintendent and other members of the staff for the routine work for which he is peculiarly qualified, and this routine work is his main business. The little "free" research that he can do must be done on his own initiative, or in co-operation with other qualified research men, and not, as a rule, under the direction of the superintendent or the institutional physician. This type of psychologist is scarcely available yet, but will appear as the needs become felt. What we now need is a whole-hearted recognition of the opportunities for such a modest profession. C. E. S.

ARE WE AFRAID OF COMPETITION?

It appears to be the fashion in some quarters to decry the use of competition as an incentive for school work. It is pointed out that competition enlists active work from only a limited number of the pupils, those who entertain hopes of success in the trial of wits and skill, that it arouses jealousy and bitterness, and that it may lead pupils of poor vitality to bankrupt their health. It is argued, moreover, that the spirit of competition is foreign to the ideal atmosphere of quiet assimilation of learning. On the other hand, that competition is a most powerful incentive to work, and that it constitutes a main factor in the motivation of activities outside the school is self-evident. More than this, it would seem that

MICHIGAN STATE NORMAL COLLEGE
TRAINING SCHOOL DEPARTMENT.

competition is particularly valuable in developing the capacities of pupils of more than average ability. In a school system that makes free use of competition, pupils of more than usual promise are speedily singled out, and the way is smoothed for their advancement. These reflections have been inspired particularly by contemplation of the competitive features of the English schools. The reader of such a periodical as *The Educational Times* of London cannot fail to be impressed by the page or two of announcements that appear monthly under the caption, "The Educational Ladder." The number of scholarships, fellowships, prizes, exhibitions and other scholastic rewards is nothing short of astounding to the American reader who is unfamiliar with the use made of these devices by our cousins across the water. One can scarcely escape the conviction that we might well introduce a larger amount of competition into the American school system.

THE FUNCTION OF EXAMINATIONS.

In all civilized countries the accepted tests of educational proficiency are examinations. Yet many teachers resent examinations, and it is quite a common thing nowadays to find educational theorists inveighing against them. A writer in the *Mathematics Teacher* for June delivers himself as follows: "The policy of standardizing everything by examinations is doing our expensive school system an untold injury; the report of the city superintendent compares the schools according to the number of their pupils who pass the examinations, and the principal warns the teacher that he is rated according to the number of his pupils that pass, and this pressure is passed on to the pupil. Until some method of close classroom observation and supervision is introduced with a view to allowing free rein to a teacher's individuality and originality, even at the expense of his pupils' failing the conventional examinations, it is hardly worth while suggesting other changes."

This writer obviously has a grievance. What is its justification? Surely he would not deny that it is desirable for the teacher to know precisely what progress his pupils are making. Without a continuous adjustment of the work to the pupils' advancing attainments no efficiency in teaching is possible. Nor do we see how a school system can be successfully conducted without some sort of unification and standardization. It should, indeed, be the business

of the teacher to stimulate the pupil to "pass" a certain mark in his educational progress, provided the standard is commensurate with the pupil's mental abilities. The trouble lies in a conflict of aims as to what these particular children should be expected to do as a result of their term's work. The conventional examination is set from without, and rarely offers a real test of the work done by the individuals of the class. Both pupils and teachers feel that the result is largely a matter of luck, and resent the introduction of this foreign and disturbing element. The thing that should be kept in mind by both superintendent and teacher is what progress has the pupil made? This could perhaps best be determined by testing the pupil at regular intervals by means of objective tests arranged in the form of scales. It would be a great gain if the pupil himself were able at any time to determine his own performance and progress as measured on such a scale. In any event, it is the pupil that should occupy the focus of attention rather than the teacher, or the superintendent, or the system. Teachers who complain that objective tests crush out their individuality and originality too often use these terms to conceal planlessness and lack of thought for the pupil.

J. C. B.

NOTES AND NEWS.

The Fourth International Congress of Physical Education will be held at Rome, October 24-27. Among the topics for discussion will be rational methods of physical education, open-air schools, sports, preparation for military service, etc.

The Physical Education Association of the Pacific Coast held its first annual conference at Berkeley, Cal., July 26 and 27, 1912. Among the addresses were the following: "The Function of the Physical Educator," Clark W. Hetherington; "Instruction in Personal Hygiene in the Public Schools," M. A. Bigelow; "Present Movements Tending Toward Moral Education and Their Relative Values," C. E. Rugh; and "Physical Education as Fundamental to Modern Education," R. B. Boone. A feature of the conference was the demonstration of dancing and gymnastic drill in the Greek theater on the evening of July 26.

Considerable dissatisfaction is expressed with the attitude of the English Board of Education toward the matter of the medical treatment of school children. Instead of the hoped-for £200,000, the estimates provide for only £60,000, a sum which is characterized by *School Hygiene* as "niggardly." The policy of the Board is to bring medical inspection completely under the control of the medical officers of health—a course which will result in the treatment of school children by medical men who have no clinical experience, who are completely out of touch with current medical work and for whom "the child is only a thing to be weighed and measured (once in a lifetime) and scheduled."

The annual conference of the English Child Study Society was held in London, May 9-11, 1912. The general subject for consideration at the conference was The Health of the Child in Relation to Its Mental and Physical Development, and, as the papers were printed in advance, the entire time was devoted to a discussion of the issues presented. Dr. C. W. Saleeby, in a lecture on Eugenics and Child Study, emphasized the necessity for a careful study of the nature of the child as a foundation for eugenics. He vigorously attacked the work of Professor Karl Pearson and his school for neglecting this important phase of the subject. "Only child study will distinguish between the characters that are natural, and therefore transmissible and of eugenic importance and those which are non-transmissible and irrelevent for eugenics."

The *Revue Psychologique* urges the establishment of an International Bureau of Paidology, one of whose functions would be to decide upon the questions to be discussed at future international congresses of paidology. Among such questions the following are suggested: the relations between paidology and pedagogy; a complete classification of terms and methods; unification of measurements in all the fields of paidology; the place of paidology in a classification of the sciences; the use of tests in paidology; and the important points in the study of correlations, and the abbreviations of titles, periodicals and books.

Professor N. Vinogradoff of Moscow is revising for publication in the immediate future a Russian translation of Professor Whipple's *Manual of Mental and Physical Tests.*

Dr. Wilhelm Wundt, professor of philosophy in the University of Leipzig, one of the founders of modern psychology, celebrated his eightieth birthday on August 16, on which occasion a "Wilhelm Wundt Stiftung," amounting to 7000 marks, was presented to the university by his students and friends.—*Science.*

Professor G. M. Whipple has delivered at the summer session of the University of Illinois a series of three lectures, one upon "The Training of Memory," one upon "The Psychology of the Marking System" and one upon "The Supernormal Child."

Dr. Irwin Shepard of Winona, Minn., has resigned the secretaryship of the National Education Association after twenty years of faithful and valuable service.

Professor Edwin D. Starbuck has been granted a year's leave of absence from the University of Iowa for the purpose of engaging in expert psychological work in religious education for the Beacon Press, Boston.

Professor W. A. Jessup, who was recently appointed dean of the School of Education at the University of Indiana, has resigned this position to become Director of the School of Education at the University of Iowa.

Dr. J. Anna Norris of the School of Education at the University of Chicago was recently elected by the board of regents of the University of Minnesota as head of the department of health and physical training for women. She will also occupy the newly created position of woman's physician in that university. Dr. Norris has been for the last five years instructor in hygiene and physical education and assistant medical director in the School of Education at Chicago.

PUBLICATIONS RECEIVED TO SEPTEMBER 1, 1912.

(Notice in this section does not preclude a more extended review.)

FANNY FERN ANDREWS. *Peace Day. Suggestions and Material for Its Observance in the Schools.* Bulletin 476. Washington: Bureau of Education, 1912. Pp. 46.

LEONARD P. AYRES. *The Measurement of Educational Processes and Products.* New York: Russell Sage Foundation, 1912. Pp. 9.

A sketch of the progress that has been made in the past decade in the application of experimental and statistical methods of investigation to the problems of education. "The certainty about the scientific method in education is that it is with us. That it will develop enormously in the immediate future is entirely sure. * * * What is to be our attitude toward each new contribution? My own answer is that we must welcome them all, but challenge them all, and attempt to verify them all."

Bibliography of Education in Agriculture and Home Economics. Bulletin 481. Washington: Bureau of Education, 1912. Pp. 62.

ROBERTO BONALO. *Non-Euclidean Geometry.* Authorized English translation by H. S. Carshaw, with an introduction by Federigo Enriques. Chicago: Open Court Publishing Co., 1912. Pp. xii, 268.

An elementary, historical and critical exposition of the subject, including chapters on the attempts to prove Euclid's parallel postulate; the forerunners of non-Euclidean geometry; the founders of the science and its later development. Appendices discuss the fundamental principles of statics in their relation to Euclid's postulate, the Clifford-Klein problem, non-Euclidean parallel construction, the independence of projective geometry and the impossibility of proving Euclid's postulate.

A suggested program for Peace Day exercises, with the readings, recitations, songs, extracts, etc., required. There is also a representative bibliography of peace literature.

The Book of the Educational Exhibit of Greenwich, Connecticut. Greenwich: 1912. Pp. 24.

Seldom does one find such a scathing arraignment of a commu-

nity's negligence in educational matters as is set forth in this richly-illustrated report made at the town's request by Dr. Ayres of the Russell Sage Foundation. The second richest town in America has school buildings which, as shown by photographs, present intolerable sanitary conditions. It is to be hoped that this report will so arouse the civic consciousness that an immediate change of policy will result.

HENRY ELDRIDGE BOURNE AND ELBERT JAY BENTON. *Introductory American History.* New York: D. C. Heath & Co., 1912. Pp. vii, 264.

This introduction is in accordance with the new plan of the study of history recommended by the Committee of Eight of the American Historical Association. The whole book centers about the theme of migration. The first 10 chapters deal in simple story form, with a comparison of our immigration with the earliest migrations, and the stories of the Greeks and the Romans and what we owe to them. Chapters 10 to 14 tell of the migration spirit in medieval Europe as shown in conquest, exploration and trade, and the remaining chapters present the Spanish, French and English explorations in America. The account is fascinatingly told and attractively illustrated.

JAMES C. BOYKIN, Editor. *Current Educational Topics.* No. 1. Bulletin No. 482. Washington: Bureau of Education, 1912. Pp. 26.

The topics discussed in this report are as follows: 1. Illiteracy in the United States and in Europe. 2. Industrial Supervisors in Georgia. 3. New Phases of Education in Buffalo, N. Y. 4. Juvenile Labor Bureaus and Vocational Guidance in Great Britain. 5. The Educational Museum of the St. Louis Public Schools.

PERCIVAL CHUBB AND HIS ASSOCIATES. *Festivals and Plays in Schools and Elsewhere.* New York: Harper & Bros., 1912. Pp. xxii, 403. $2 net.

Festivals, plays and dramatizations of historical and mythical incidents have come into school procedure to stay. Indeed, it may confidently be predicted that the next decade will witness a great increase in the esteem in which these activities are held. For one thing, they are based upon fundamental psychological characteristics of the child. The whole mental structure of the school child is essentially dramatic if it is freed from the restrictions of fear and repression. The authors of this book, who are the recognized leaders in festival organization in the country, have produced a practical handbook which incorporates the solutions to the problems of the festival which have been worked out by the Festival Committee of the Ethical Culture School of New York City. But in almost every chapter of the book one finds observations and suggestions of pro-

found psychological and pedagogical import. Our teachers are to be congratulated on having this material made available for them.

GEORGE V. N. DEARBORN. *Notes on the Neurology of Voluntary Movement.* Reprinted from The Medical Record, May 18, 1912. Pp. 48.

Most psychologists profess their allegiance to some form of psychophysical parallelism, but ostentatiously leave to the neurologists the task of tracing the neural correlates of mental activities. As a result, few attempts have been made to construct a representation of the neural processes which probably underlie the rational control of action. A notable exception is the recent work of Max Meyer on *The Fundamental Laws of Human Behavior.* For the student of behavior, however, it is of interest and possibly of importance to consider the mechanism of control, and the present article offers a stimulating analysis of the problem. Part I gives us a biological orientation, Part II deals with the development of voluntary movement in the infant, and Part III discusses the adult neurology of voluntary movement.

PAUL DEUSSEN. *The System of the Vedanta.* Authorized translation by Chas. Johnston. Chicago: Open Court Publishing Co., 1912. Pp. xvi, 513.

An exposition of the postulates of Brahmanism, following closely the classic works of Badarayana and Cankara.

ERNEST WILDER FELLOWS. *A Comparative Study of City School and Rural School Attendance.* University of Iowa Studies in Education, Vol I, No. 2, April, 1912. Pp. 28.

An intensive study of school attendance in Crawford County, Iowa, on the basis of information gathered directly from the teachers for the purposes of this investigation, shows that boys and girls in the country drop out of school entirely about a year younger than those in town. Urban pupils maintain a given average number of days attended until they are from two to five years older than rural pupils maintaining the same average. Rural pupils from twelve to seventeen years of age attend school only about half as many days per year as those in the town. Although town teachers are paid higher wages, the cost for teachers per pupil per day is 25 per cent. higher in rural schools, and although town schools have better equipment and better buildings, the cost for maintenance per pupil per day is 18 per cent. higher in the country.

J. J. FINDLAY, M.A., PH.D. *The School: An Introduction to the Study of Education.* (The Home University Library of Modern

Knowledge, No. 32.) New York: Henry Holt & Co., 1912. Pp. viii, 256. 50 cents net.

The author, who is professor of education in Manchester University, England, has aimed to provide a readable account of the general principles of education in such a form as to be valuable to the teacher in training and also to the citizen who wants to acquaint himself with the origin, problems and methods of the school. The scope of treatment includes biological and psychological as well as sociological phases of the educational problem. The chapters on the function of the school and on the teacher strike us especially favorably. The volume, despite its natural reference to English rather than to American schools, is sufficiently broad to be of use in normal schools and college departments of education as material for reading by teachers in training.

P. HACHET-SOUPLET. *La genese des instincts: Etude experimentale.* Paris: E. Flammarion, 1912. Pp. 327. 3.50 fr.

In Book I of this work the author reviews and criticises the current methods in animal psychology and comments on the favor which this study enjoys at present in France. Book II discusses instinct from the static point of view, argues that the theory of tropisms is untenable, and points out the distinctions between intelligent and instinctive behavior. Book III gives a résumé of analytic and experimental researches which professedly show the evolution of instincts from habits (sic), and Book IV presents studies of particular instincts, such as the hexagonal comb-building of the bee.

G. STANLEY HALL. *Founders of Modern Psychology.* New York: D. Appleton & Co., 1912. Pp. viii, $2.50 net.

This book is an extension and amplification of a course of lectures delivered last winter before the department of psychology in Columbia University. The author has performed a real service in bringing to the notice of English readers the lives and thoughts of six of the great German psychologists of the past half-century. These are Eduard Zeller, Rudolph Hermann Lotze, Gustav Theodor Fechner, Eduard von Hartmann, Hermann L. F. von Helmholtz and Wilhelm Wundt. During his six years' residence in Germany the author came into personal contact with each of these great pioneers. He was perhaps the only American psychologist who attempted experimental work with Helmholtz, and was the first American pupil of Wundt. The book is, therefore, replete with intimate personal touches and characterizations, which make it invaluable.

H. L. HOLLINGSWORTH. *The Influence of Caffein on Mental and Motor Efficiency.* Archives of Psychology, No. 22, April, 1912. Pp. v, 166.

An elaborate experimental study on the effects of caffein in small,

medium and large doses, showing that in most cases the drug acts as a mild stimulant, persisting from three to twenty-four hours, with no secondary reaction. "Rivers' conclusion that 'caffein increases the capacity for both muscular and mental work * * * without there being any evidence, with moderate doses, of reaction leading to diminished capacity for work,' is thoroughly confirmed by the results of all the present experiments."

EDMUND B. HUEY. *A Syllabus for the Clinical Examination of Children, together with Blanks for a Complete Record of the Examination.* Baltimore: Warwick & York, 1912. Pp. 45. Syllabus, 35 cents. Blanks, 40 cents per dozen. Clinical Reference Cards, 30 cents per dozen.

This syllabus offers an excellent guide for anyone who desires to use the Binet-Simon tests of intelligence, giving full directions for their application. The blanks not only furnish a convenient form of record for the results of these tests, but include a point scale for 19 other tests of intelligence, a home record and personal history, and a school report of physical and mental conditions.

Influences Tending to Improve the Work of the Teacher of Mathematics. International Commission on the Teaching of Mathematics. American Report, Committee No. VIII. Bulletin 485 Washington: Bureau of Education, 1912. Pp. 47.

The agencies considered include scientific societies and periodical literature, teachers' associations, teachers' institutes, state supervision, publishers and agents, and summer sessions of universities and normal schools. State supervision is poor and ineffective, while the influence of publishers and their agents has been highly beneficial.

GEORGE W. JACOBY, M.D. *Suggestion and Psychotherapy.* New York: Charles Scribner's Sons, 1912. Pp. 355. $1.50 net.

A commendable popular presentation of the subjects treated. Part I deals with suggestion from two points of view: that of psychology, a field in which the author does not seem to be altogether at home, and that of neurology and psycho-pathology, where he moves with greater freedom. This part concludes with numerous historical examples of suggestion. Part II, psychotherapy, is the most valuable portion of the book, especially on account of comments and criticisms on prevalent methods.

WILLIAM HEARD KILPATRICK. *The Dutch Schools of New Netherland and Colonial New York.* Bulletin 483. Washington: Bureau of Education, 1912. Pp. 239.

This admirable work is an example of the kind of research in the

history of education that is so much needed in every state in the Union. There is much good material for the history of the development of local educational agencies which awaits the enlivening touch of the painstaking investigator. An adequate picture of the educational past can be portrayed only by limiting one's energies to a narrow field. The author has considered only the Dutch schools, neglecting the early English schools of New York. Of especial interest is chapter fourteen, which discusses the elementary school from within and gives a vivid characterization of the educational procedure of the time.

HELEN MACMURCHY. *Feeble-Minded in Ontario.* Fourth and Fifth Reports, for the Years 1909 and 1910. Toronto: L. K. Cameron, 1911. Pp. 50 and 55.

A survey of conditions in Ontario, and an account of the measures taken to care for the feeble-minded in that province.

HELEN MACMURCHY. *Infant Mortality.* Third Report. Toronto: L. K. Cameron, 1912. Pp. 75.

The author sets forth the reasons for the high rate of infant mortality in Canada, and pleads for better sanitation and a campaign of enlightenment on the treatment of the new-born.

HANS POHLMANN. *Beitrag zur Psychologie des Schulkindes.* Leipzig: Otto Nemnich, 1912. Pp. 314. M. 8.50. Geb. M. 10.00.

This important experimental investigation is Volume XIII of Meumann's Pedagogical Monographs, and we are told in the subtitle that it rests on "the basis of systematic, empirical researches on the development of the understanding for words and the attendant linguistic and psychological problems in children from five to fourteen years of age." Eighty-five words belonging to 10 different classes of meaning were proposed singly to each of 126 children for definition. The answers to each word are tabulated according to the ages of the children. The development of verbal meanings seems to be purely accidental and in no way determined by logical considerations.

The Relations of Psychology and Medical Education. A Symposium by SHEPHERD IVORY FRANZ, ADOLF MEYER, E. E. SOUTHARD, JOHN B. WATSON and MORTON PRINCE. Reprinted from the Journal of the American Medical Association, 58: March 30, 1912, pp. 909-921.

All the writers agree as to the desirability of a more careful study of mental phenomena by medical students, but opinions differ as to the particular type of psychology that will be most serviceable to the physician.